TECOM Pam 25-32

AD NO.

Information Management: Publishing and Printing

INDEX OF INTERNATIONAL TEST OPERATIONS PROCEDURES AND TECOM TEST OPERATIONS PROCEDURES

16 March 1998

HEADQUARTERS, U.S. ARMY TEST AND EVALUATION COMMAND

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY TEST AND EVALUATION COMMAND
ABERDEEN PROVING GROUND, MARYLAND 21005-5055

REPLY TO
ATTENTION OF

AMSTE-TM-T (70) 17 March 1998

MEMORANDUM FOR Administrator, Defense Technical Information Center, ATTN: OCA (Ms. L. Lynch) 8725 John J. Kingman Rd, STE 0944, Ft Belvoir, VA 22060-6218

SUBJECT: TECOM Pamphlet 25-32, Index of International Test Operations Procedures (ITOP's) and TECOM Test Operations Procedures (TOP's), 16 March 1998

1. As discussed with you this morning, forwarded is DTIC Form 50 (Encl 1) and one copy of subject pamphlet (Encl 2) via Federal Express, for assignment of accession number by Thursday, 19 March 1998. AD number assignment is required before we can send the document to the printer and to be available at TECOM's Test Technology Symposium on 23 March 1998.

2. Subject Pamphlet supersedes TECOM Pamphlet 25-32, AD No. A292425, 28 February 1995, which should be removed from your library and discarded.

3. The TECOM point of contact is Mr. Wolfgang H.R. Schmidt, AMSTE-TM-T, wschmid@tec1.apg.army.mil, DSN 298-1486.

FOR THE COMMANDER:

2 Encls

C. DAVID BROWN, Ph.D.
Chief, Simulation & Technology Div
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DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY TEST AND EVALUATION COMMAND
Aberdeen Proving Ground, Maryland 21005-5055

TECOM Pamphlet
No. 25-32
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16 March 1998

Information Management: Publishing and Printing
INDEX OF INTERNATIONAL TEST OPERATIONS PROCEDURES AND TECOM TEST OPERATIONS PROCEDURES

Current as of 16 March 1998

*This Pamphlet supersedes TECOM Pamphlet 25-32, 28 February 1995, AD No. A292425.

CHAPTER 1

INTRODUCTION

1-1. PURPOSE AND SCOPE. This pamphlet contains an index of international test operations procedures (ITOP's) and TECOM test operations procedures (TOP's) used in support of national and international test programs. It applies to Headquarters, TECOM, and its test centers.

1-2. REFERENCES. Related publications are listed in appendix A.

1-3. DEFINITION. ITOP's and TOP's define test procedures to be used by TECOM test centers during Government developmental tests and customer tests of research and development materiel/systems. Related NATO STANAG's, DOD MIL-STD's, and test reports listed in appendix A serve as test support documentation. The test documentation is prepared to accomplish the following:

a. Document the existing state-of-the-art testing technology.

b. Facilitate the preparation of detailed test plans.

c. Prescribe the details of planned operations during the testing of materiel/systems.

d. Reflect current international agreements in specific technical areas.

1-4. DISTRIBUTION.

a. Index. Headquarters, TECOM, is responsible for initial distribution of this index document in accordance with requests from DOD activities. Forward requests for additional copies to Director, Defense Technical Information Center (DTIC), 8725 John J. Kingman Road, STE 0944, ATTN: OCA, Fort Belvoir, VA 22060-6218. Include the DTIC accession number (AD number) when requesting copies.

b. ITOP's and TOP's.

(1) Initial. Headquarters, TECOM, is responsible for initial distribution of these documents in accordance with requests from DOD activities. To ensure that initial distribution adequately satisfies current requirements, users should continually review their requirements and forward changes to Commander, U.S. Army Test and Evaluation Command, ATTN: AMSTE-TM-T, Aberdeen Proving Ground, MD 21005-5055.

(2) Secondary.

(a) DTIC makes secondary distribution. DTIC services are available to all Federal organizations and their contractors, subcontractors, and grantees, and to research organizations eligible under the Defense Potential Contractors' Program. Microfiche copies and hard copies are available subject to a minor charge.

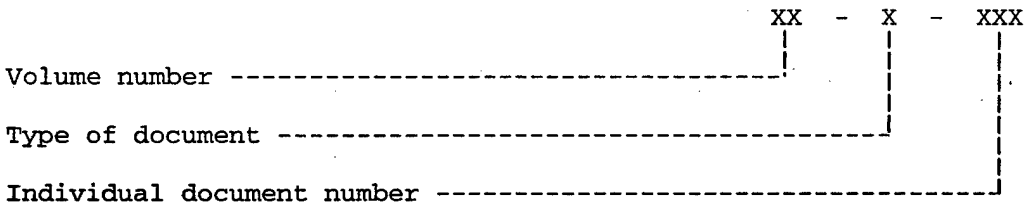
(b) Forward requests for additional copies to Director, Defense Technical Information Center, 8725 John J. Kingman Road, STE 0944, ATTN: OCA, Fort Belvoir, VA 22060-6218. Include the DTIC AD number when requesting copies.

CHAPTER 2

DOCUMENT IDENTIFICATION AND NUMBERING SYSTEM

2-1. IDENTIFICATION. The documents are identified by type (i.e., background, common/system, special, and environmental) and by category of interest (e.g., vehicle, armament, ammunition).

2-2. NUMBERING SYSTEM. The numbering system identifies the volume, type of documents, and individual number as follows:



2-3. VOLUME DESCRIPTIONS. Volumes are identified as follows:

Volume	Title	Description
1	Background Documents and Miscellaneous Common Test Procedures	Background and common documents applicable to more than one volume.
2	Wheeled, Tracked, and Special Purpose Vehicles	Primarily land-type vehicles; e.g., amphibious and special purpose vehicles, automotive equipment, and armored vehicles.
3	Armament and Individual Weapons	Weapon portion of tanks, self-propelled artillery, and other combat vehicles; e.g., tube artillery, air defense weapons (non-rocket), mortars, grenade launchers, recoilless rifles and small arms.
4	Ammunition and Explosives	Warheads, projectiles, fuze mechanisms, ignition systems for ammunition, propellants, and explosives. Applies to small arms ammunition, cartridge cases, chemical munitions (exclusive of agent), flame-throwers, pyrotechnics, grenades, and mines.
5	Missile and Rocket Systems	Ballistic and guided missiles, target missiles, guided-missile systems, and electronic ancillary equipment. Applies to associated ground support equipment.

Volume	Title	Description
6	Electronic, Avionic, and Communications Equipment	Electronic equipment including combat surveillance, radar, fire control, and target acquisition equipment. Applies to airborne navigational systems, electronic test equipment, automatic data processing equipment, communications systems, and radio equipment.
7	Aviation, Air Delivery Equipment, and Aircraft Weapons Subsystem	Aviation equipment including fixed and rotary wing aircraft, aircraft engines, drones, aircraft support equipment, air delivery equipment, rigging, parachutes, and aircraft weapons subsystems.
8	Chemical, Biological, and Radiological Equipment	Chemical weapons to include biological protection, detection, and surveillance equipment and radiological detection and surveillance materiel.
9	Construction, Support, and Service Equipment	Construction, support, and service equipment and power-generating, barrier, and bridging equipment.
10	General Supplies and Equipment	Food, shelter, fuel, cooling, and ventilation equipment; general and special purpose clothing and equipment; photographic and optical equipment; and support equipment for airdrop operations.

2-4. TYPES OF DOCUMENTS. Types of documents are identified as follows:

Number	Type	Description
1	Background	Provide technical data concerning those factors that influence test operation. Environmental considerations, instrumentation, facilities, mathematical modeling, and special engineering techniques are typical of this category.

Number	Type	Description
		Background documents represent a very small portion of the total library.
2	Common/System	Represent the major portion of the index. These documents are associated with developmental testing II and are written at the lowest subtest level associated with an individual characteristic of an item; e.g., acceleration, velocity, and mobility. Each document includes a discussion of scope, facilities and instrumentation, required test conditions, test procedures, data required, and presentation of data. Checklists and data collection sheets are included in the appendixes, as appropriate.
3	System	Identify the common requirements, military standards, and other supporting tests required to evaluate the capabilities and limitations of a category or categories of items. In addition, these documents provide supplementary instructions required to quality, limit, or modify the applicable documentation.
4	Special	Provide test procedures that go beyond those associated with individual characteristics.

2-5. INDIVIDUAL DOCUMENT NUMBERS. Individual document numbers are designated as follows:

a. In all volumes, numbers 500 and larger are assigned to common documents.

b. In volume 1, numbers less than 500 are assigned to background documents.

c. In all other volumes. numbers less than 500 are assigned to system documents.

CHAPTER 3

NUMERICAL INDEX

Section I - General

This chapter contains a numerical list of documents titles within the ITOP's/TOP's index data base. The letters appearing in parentheses between the document number and document title columns identify the preparing organizations. All documents available from DTIC have a special DTIC identification number listed in the right-hand column, which shall be used when ordering documentation. (For additional ordering information see page 1-1, subparagraph 1-4b(2), above.)

(HQ)	Headquarters, U.S. Army Test and Evaluation Command
(A)	U.S. Army Aviation Technical Test Center
(Y-CR)	Cold Regions Test Center
(ATC)	U.S. Army Aberdeen Test Center
(D)	U.S. Army Dugway Proving Ground
(R)	U.S. Army Redstone Technical Test Center
(Y-TTS)	U.S. Army Tropic Test Site
(W)	U.S. Army White Sands Missile Range
(W-E)	Electronic Proving Ground
(Y)	U.S. Army Yuma Proving Ground

CHAPTER 4

CROSS-REFERENCE INDEX

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Chapter 5

ABSTRACT INDEX

This chapter contains abstracts for all documents to highlight contents, primary tests, and supporting test requirements during the testing phases. Changes to the documents are listed in Chapter 3 as revision dates.

TOP 1-1-003 134892 01/09/83

ARCTIC PERSONNEL EFFECTS

Describes background information on the physiological effects of extreme cold on the human body. A brief overview of some of the physiological problems of operation in a cold environment and the procedures used to overcome these problems are provided along with the detailed techniques and requirements for tests involving the effects of a cold environment on personnel.

TOP 1-1-004 A279492 27/05/94

COLD REGIONS INSTRUMENTATION CONSIDERATIONS

Describes background information on the problems and adaptations associated with instrumentation, photographic and video equipment required for conducting tests in cold regions. Basic information and procedures are presented as general guidelines to planning and using instrumentation systems for cold environments.

TOP 1-1-005 A147703 13/10/84

ADAPTATION OF MILITARY MATERIEL FOR COLD REGIONS USE

Describes background information relative to the test, evaluation, and design of special cold weather adaptation kits and materiel requiring such kits. Describes current adaptation kit hardware and techniques for their use. Identifies problem areas. Discusses adaptation kits for use with tank/automotive materiel, aviation materiel, CBR equipment, generators, radio equipment, wire communications equipment, and weapons. Not applicable to construction, support, and service equipment except generators.

TOP 1-1-006 766261 10/08/72

DESERT ENVIRONMENTAL CONSIDERATIONS

Describes background information on the test of materials in a desert environment. Discusses desert environment characteristics, climate, temperature, solar radiation, humidity, terrain, desert types, desert terrain, classification, distribution, sand, dust, vegetation, and camouflage. Appendixes provide world extreme hot-dry temperature distribution and computation of Yuma degree-hour levels. Applies to desert testing. Not applicable to testing of food and clothing.

TOP 1-1-007 770035 01/08/73

DESERT MAINTENANCE CONSIDERATIONS

Describes background information relative to maintenance during desert environmental tests. Discusses general and unique maintenance requirements, problems, and evaluation guidance. Applicable to all materiel.

ITOP 2-2-501(1) A178087 20/05/87

FR/GE/UK/US TRACKED-VEHICLE SWIMMING TESTS

Describes procedures to assess the performance in water of tracked vehicles which have either built-in floating/swimming capability or kits to enable them to float or swim. This performance is critical to tactical-vehicle crossings of deep-water obstacles.

ITOP 2-2-506(1) A180439 15/05/87

FR/GE/UK/US TRACKED-VEHICLE ENDURANCE TESTING

Describes procedures for conducting endurance tests of military tracked vehicles over various standard test courses for prescribed distances or times. Endurance testing involves extended operation of one or more test items under cycles designed to simulate, under proving ground conditions, extended field use. The endurance test is the principal means of producing data for reliability and availability during development tests and also is a major source of information on maintainability and human factors.

ITOP 2-2-509(1) A178501 28/05/87

FR/GE/UK/US TRACKED-VEHICLE RELIABILITY, AVAILABILITY, AND MAINTAINABILITY

Describes procedures for collecting and reporting reliability, availability and maintainability (RAM) data during endurance testing of tracked vehicles The main emphasis of this document is hardware-related reliability, availability, and maintainability as addressed in NATO STANAG 4158. Operational-related incidents resulting from operator errors or accidents do not enter into the hardware reliability calculation; however, the data would be available for evaluation if required.

ITOP 2-2-602(1) A180596 09/03/87

FR/GE/UK/US TRACKED-VEHICLE ACCELERATION: MAXIMUM AND MINIMUM SPEEDS

Describes procedures for conducting acceleration and maximum and minimum speed tests of tracked vehicles. Acceleration and maximum speed are basic measures of vehicle power; they define the ability of a vehicle to execute a change in location in a given time period. Minimum speed is a measure of the lowest continuous speed that a vehicle can sustain while maintaining smooth operation in any gear or range.

ITOP 2-2-603(1) A178192 18/05/87

FR/GE/UK/US TRACKED-VEHICLE FUEL CONSUMPTION

Describes procedures for evaluating the fuel efficiency of tracked vehicles under controlled operating conditions. The test data are a major source for comparisons with similar vehicles, and can also serve to predict the operational range of these vehicles during tactical missions.

ITOP 2-2-604(1) A180597 11/08/87

FR/GE/UK/US TRACKED-VEHICLE DRAWBAR PULL ON SOFT SOIL

Describes the procedures for determining the drawbar-pull characteristics of tracked vehicles on soft soil (sand and fine-grained soils). Drawbar pull on soft soil provides an important measure of vehicle mobility during operation over adverse terrain. It represents the power available beyond that required to overcome soft-terrain power losses such as track slippage, ground resistance to motion, and hull drag resistance. (Results from sand-course testing are directly comparable; results from testing in fine- in fine-grained soils require a correlation study).

ITOP 2-2-604(3) A180595 21/05/87

FR/GE/UK/US TRACKED-VEHICLE DRAWBAR PULL ON HARD SURFACE

Describes procedures for determining the drawbar pull characteristics of tracked vehicles on hard-surfaced roads. Drawbar pull provides a measure of the reserve power available to a vehicle (in excess of that required for vehicle propulsion on a level road) for acceleration, towing, or hill climbing. Vehicles are tested for drawbar pull to establish performance curves that can be used for evaluations and comparisons with similar vehicles. These data also serve to predict gradeability when no facilities are available for determining slope performance at a desired gradient.

ITOP 2-2-605(1) A178275 13/03/87

FR/GE/UK/US TRACKED-VEHICLE TOWING RESISTANCE

Describes the procedures for determining the power losses attributable to the suspension system of tracked vehicles and the braking effect available for descending grades by measuring vehicular resistance to towing. (Results from sand-course testing are directly comparable; results from testing in fine-grained soils require a correlation study).

ITOP 2-2-607(1) A180594 21/05/87

FR/GE/UK/US TRACKED-VEHICLE FULL LOAD COOLING

Describes procedures for evaluating the cooling characteristics of tracked-vehicles engine, power-train, and auxiliary components when subjected to full-throttle vehicle operations and exposed to extreme (high-temperature) environments. To prevent damage to power-producing and power-transmitting components, operating temperatures must be maintained within specified limits under all conditions.

ITOP 2-2-609(1) A178322 18/05/87

FR/GE/UK/US TRACKED-VEHICLE STEERING

Describes procedures for evaluating the steering performance of tracked vehicles. Steering performance is a measure of vehicle maneuverability which is of major importance during tactical missions.

ITOP 2-2-610(1) A180602 21/05/87

FR/GE/UK/US TRACKED-VEHICLE GRADEABILITY AND SIDE-SLOPE PERFORMANCE

Describes procedures for evaluating tracked-vehicles performance on various longitudinal grades and side slopes. Gradeability and side-slope performance provide a means for determining the adequacy of vehicle power, tractive ability, stability, control, and power-plant operational characteristics when negotiating longitudinal and side slopes.

ITOP 2-2-611(1) A180593 21/05/87

FR/GE/UK/US TRACKED-VEHICLE OBSTACLES

Describes procedures for evaluating gap crossing and wall climbing of tracked vehicles. Gap crossing limit is defined as the maximum free space that a slowly moving vehicle can cross, starting from a level platform with a straight lateral edge and crossing to a like surface on the same level. Wall climbing ability is determined by using vertical walls of various heights.

ITOP 2-2-612(1) A178162 18/05/87

FR/GE/UK/US TRACKED-VEHICLE FORDING

Describes procedures for evaluating the fording ability of military tracked vehicles as well as the effectiveness of fording kits. Fording capability for tactical vehicles is critical to movement of military units across rivers, streams, and other small bodies of water when bridges and bridging devices are not available. The types of fording covered in this document are shallow-water, deep-water, and underwater fording.

ITOP 2-2-617 17/11/97

FR/GE/UK/US VULNERABILITY TESTING OF COMBAT VEHICLES AND THEIR COMPONENTS/SUBSYSTEMS (UTILIZING CONVENTIONAL WEAPONS)

Describes guidance for the planning and methodology necessary to conduct vulnerability tests of combat vehicles (tanks, fighting vehicles, armored personnel carriers, etc.), and their components/subsystems, including experimental versions. The main body of the ITOP provides background to different types of tests and gives examples of specific tests to assist understanding. Emphasis is also given to test measurements to assist standardization of data in terms of both measured parameters and associated accuracy requirements. In some cases, additional procedures may be required to conduct the tests. Under terms of the ITOP it will be necessary to specify the individual procedures used to obtain data, or to state how the data was obtained and its estimated accuracy.

ITOP 2-2-619(1) A181030 01/06/87

FR/GE/UK/US TRACKED-VEHICLE SOFT-SOIL MOBILITY

Describes testing procedures required to assess comparative soft-soil mobility characteristics of tracked-vehicles. Whereas operation over hard surfaces is normally not a mobility problem, off-road operation over soft terrain such as sand, loam, mud, snow, and swamps usually does create locomotion difficulties of varying degrees. In a comparative sense, test-vehicle performance is quantified for soft-soil crossing capability in order to determine the most efficient track, suspension and hull designs. Off-road mobility problems created by brush, trees, and solid objects are not covered by this document, nor is the interrelationship of maneuverability and mobility.

ITOP 2-2-627(1) A180603 21/05/87

FR/GE/UK/US TRACKED-VEHICLE BRAKING

Describes a method of evaluating the brake systems of tracked vehicles. Braking system performance is the principal consideration for vehicle safety evaluation, and is a major source of information about human factors. The braking test with brakes in hot condition provides information about the braking system's ability to absorb energy through repeated brakings.

ITOP 2-2-650(1) A180511 18/05/87

FR/GE/UK/US TRACKED-VEHICLE ENGINE COLD START TEST

Describes procedures for testing the cold-starting capability of military tracked-vehicle engines. A successful start is defined as a start of a cold-soaked vehicle with a continuous or total cranking period not more than that specified in the equipment operator's manual or applicable requirements document, followed by an engine idling period of a least 2 minutes. Testing is always conducted with fully-charged batteries; however, additional testing is sometimes required with lower charged batteries to simulate field operating conditions.

ITOP 2-2-702(1) A180458 15/05/87

FR/GE/UK/US TRACKED-VEHICLE ALTITUDE EFFECTS

Describes procedures for evaluating the effect of high altitude on tracked-vehicle power packages under field or test-chamber conditions. Drawpull and acceleration tests are used in the field dynamometer tests in the test chamber as power measurements to determine the effect of altitude on engine performance.

ITOP 2-2-716 B222754 25/10/96

FR/GE/UK/US MEASUREMENT OF BEHIND ARMOR DEBRIS

Describes procedures and guidance for determining the characteristics of behind armor debris (BAD) for kinetic energy (KE), explosively formed penetrator (EFP), and shaped charge (SC) munitions.

ITOP 2-2-800(1) A180463 15/05/87

FR/GE/UK/US TRACKED-VEHICLE CENTER OF GRAVITY

Describes procedures for determining the location of the center of gravity (c.g.) of tracked vehicles. The location of the center of gravity provides information relative to dynamic stability, transportability, and mobility models. The suspension method is based on the fact that a vertical line through the point of suspension will pass through the mass center of a freely suspended body. The weighing method is based on the fact that when a body is in static equilibrium, the sum of the moments about an axis of relation is zero. The pendulum timing method is based on the fact that the vertical center of gravity location can be calculated using the periods of oscillation.

ITOP 2-2-801(1) A180360 15/05/87

FR/GE/UK/US TRACKED-VEHICLE WEIGHT DISTRIBUTION AND GROUND PRESSURE

Describes procedures for determining weight distribution and ground pressure of tracked vehicles. Weight distribution influences the life of suspension components and affects vehicle mobility and transportability. Ground pressure also provides an indication of vehicle flotation which affects mobility when traversing soft terrain.

ITOP 2-2-808(1) A180464 15/05/87

FR/GE/UK/US TRACKED-VEHICLE MECHANICAL VIBRATION

Describes the procedures for determining the mechanical shock and vibration levels of tracked vehicles, including on-board equipment during operation over selected courses. Shock and vibration levels of tracked vehicles, components and tank crews are high, causing considerable reduction in the life cycle of the equipment. It is important to determine these characteristics to obtain a basis for constructive improvement in design in order to reduce or alter the shock-and-vibration spectrum in the system.

ITOP 2-2-816(1) A180777 21/05/87

FR/GE/UK/US TRACKED-VEHICLE CLIMATIC TESTS

Describes the procedures for determining the ability of tracked vehicles to meet the climatic requirements of guidance documents. Various climatic conditions can produce many and varying problems with tracked vehicles including on-board equipment. Such problems include systems operation, expansion and contraction of materials, and changing of the properties of matter. Tracked vehicles must be able to support military operations during any season and in climates in various locations. This document addresses preliminary functional checks of selected subsystems in climatic test chambers, and tests at extreme conditions in the natural environment in accordance with relevant ITOPs.

ITOP 3-2-051 B221144 11/10/96

FR/GE/UK/US AUTOMATIC LOADERS FOR TANK SYSTEMS

Describes procedures for safety and performance testing and evaluation of developmental and production autoloaders for tank systems. The purpose of this ITOP is to provide uniform guidance for evaluating the safety and performance of an autoloader and the effect the autoloader and the autoloader has on the integrity of the handled ammunition.

ITOP 3-2-075 A152245 07/03/85

GE/US SECONDARY ARMAMENT, VEHICLE-MOUNTED

Describes a system for evaluating secondary armament systems mounted on combat vehicles. Procedures include firing and nonfiring tests.

ITOP 3-2-506(1) A304239 16/10/95

FR/GE/UK/US ARTILLERY (SELF-PROPELLED AND TOWED)

Describes procedures for evaluating the performance of self-propelled (SP) and towed artillery armament during development and production tests. Includes functional as well as firing tests.

ITOP 3-2-506(2) A258475 23/10/92

FR/GE/UK/US TANK CANNON AND RECOIL MECHANISM

Describes procedures for conducting tests to evaluate the performance of tank cannon and hydropneumatic recoil mechanisms. This ITOP does not cover production acceptance test, cannon safety test (See ITOP 3-2-829), or cannon accessories such as thermal shrouds, muzzle reference sensors, etc.

ITOP 3-2-601 A304665 16/10/95

FR/GE/UK/US FIRING TABLES AND BALLISTIC MATCH TESTS

Describes procedures for firing tests to obtain data for preparing firing tables for artillery weapons, tank guns, and mortars.

ITOP 3-2-605 A258173 23/10/92

FR/GE/UK/US TANK SYSTEM ACCURACY/REFERENCE FIRING

Describes procedures for determining the capability of the main armament of a tank to accurately deliver fire on stationary targets. System accuracy firing shall be carried out using the system error corrections specified for the weapon system (Individual system error or fleet zero correction). This testing will evaluate the influence of weapon components, ammunition, and firing conditions on system accuracy.

ITOP 3-2-712 16/05/97

UK/US OPTICAL TRANSFER FUNCTION FOR DIRECT VIEW TELESCOPES

Describes detailed laboratory procedures for measuring the on and off-axis optical transfer function of a direct view telescopic system in the visible spectrum.

ITOP 3-2-802 A270439 14/05/93

FR/GE/UK/US MEASUREMENT AND INSPECTION OF GUN TUBES

Describes techniques and procedures for determining internal tube dimensions and other data of gun tubes during development and acceptance testing.

ITOP 3-2-803 A271973 14/05/93

FR/GE/UK/US VISUAL INSPECTIONS OF CANNON BORES

Describes the inspection techniques and equipment used for detecting, observing, and recording changes in the condition of cannon bores. It covers closed circuit television (CCTV) and telescopic borescopic systems, video tape and photographic recording methods, and techniques for making impressions and casts of the bore. Schedules and procedures for measurements and inspections of gun tubes are contained in ITOP 3-2-802.

ITOP 3-2-810 A304414 16/10/95

FR/GE/UK/US ELECTRICAL MEASUREMENT OF WEAPON CHAMBER PRESSURE

Describes instrumentation and procedures for measuring the pressure within weapon chambers up to 750,000 kPa(109,000 psi) with piezoelectric pressure transducers as a function of time during firing tests. Such measurements provide data for evaluating the design performance of projectiles, propellants, ignition systems, and cannon. The use of copper crusher gages is described in NATO STANAG 4113.

ITOP 3-2-815 B220996 11/10/96

FR/GE/UK/US RECOIL MOTION MEASUREMENT

Describes a method for selecting instrumentation for weapon recoil motion measurements. Describes selection criteria and characteristics, operation, and applicability of recoil potentiometer, time displacement (drum) camera, photoelectric transducer, and high-speed camera systems, as well as the seldom-used revolving drum and slide wire resistance systems.

ITOP 3-2-817 A244067 12/06/91

FR/GE/UK/US DIRECT FIRE JUMP

Describes techniques and procedures for determining vertical and horizontal ballistic jump angles in direct-fire applications.

ITOP 3-2-829 A258176 23/10/92

GE/UK/US CANNON SAFETY TEST

Describes procedures for determining the interim safe fatigue life and the service life of tank and artillery cannon.

ITOP 3-2-836(2.1.1) A179587 31/03/87

GE/US MAIN BATTLE-TANK FIRE CONTROL SYSTEMS - BORESIGHT AND MRS ALIGNMENT/RETENTION

Describes procedures for evaluating the boresight and muzzle reference system (MRS) alignment/retention capability of gun/fire control systems mounted in vehicles. The tests are designed to detect angular changes between gun and sighting systems, with or without the aid of MRS, after vehicle operations over cross-country courses and primary and secondary roads, after firing, and after a period of temperature changes.

ITOP 3-2-836(2.1.2) A179470 31/03/87

GE/US MAIN BATTLE-TANK FIRE CONTROL SYSTEMS - GUN/SIGHT SYNCHRONIZATION

Describes tests for measuring and evaluating the capability of vehicle-mounted main-gun sighting systems, particularly those systems located apart from the gun mount, to maintain the prescribed azimuth and elevation relationship with the gun-bore axis for all positions of gun elevation and depression.

ITOP 3-2-836(2.2.1) B221702 29/06/95

FR/GE/UK/US MAIN BATTLE-TANK FIRE CONTROL SYSTEMS STABILIZATION ACCURACY

Describes the procedures for determining (without gunner inputs) the unintended deviation of the line of sight (LOS) of a stabilized gun/turret and a stabilized sighting system with respect to an initial point (i.e. a fixed target) as the tank moves on selected test courses.

ITOP 3-2-836(2.2.2) A164390 27/06/85

GE/US MAIN BATTLE-TANK FIRE CONTROL SYSTEMS (DRIFT)

Describes procedures for determining the deviation of the line of sight (LOS) of a sighting system (integrated), or gun/turret drive with respect to initial alignment with a target, without external inputs, as a function of time. Level- and canted-vehicle orientations are investigated to determine if any interaction exists between azimuth and elevation.

ITOP 3-2-836(2.2.3) B221699 29/06/95

FR/GE/UK/US MAIN BATTLE-TANK FIRE CONTROL SYSTEMS - COINCIDENCE

Describes the procedures for determining the coincidence window of a tank fire control system.

ITOP 3-2-836(2.3.1) A267518 06/03/92

FR/GE/UK/US MAIN BATTLE-TANK FIRE CONTROL WEAPON SYSTEM RESPONSE TO CONTROL HANDLE COMMANDS

Describes the purpose and techniques to determine the weapon system response to control handle commands.

ITOP 3-2-836(2.3.2) A268445 27/04/93

FR/GE/UK/US MAIN BATTLE-TANK FIRE CONTROL SYSTEMS - FREQUENCY RESPONSE OF SERVO SYSTEMS

Describes tests to determine a weapon servo system's response to varying input commands.

ITOP 3-2-836(2.3.3) A268446 27/04/93

FR/GE/UK/US MAIN BATTLE-TANK FIRE CONTROL SYSTEMS TRANSIENT RESPONSE TO STEP COMMANDS

Describes tests to determine a weapon and sight transient response to commands of angular position and angular rate.

ITOP 3-2-836(2.4.1) B221700 29/06/95

FR/GE/UK/US MAIN BATTLE-TANK FIRE CONTROL SYSTEMS COMPUTERIZED CORRECTIONS

Describes non-firing tests to determine the differential angle between the main weapon and sight line (ballistic solution) generated by a computerized fire control system in response to given inputs.

ITOP 3-2-836(2.5.2.2) B221701 14/03/96

FR/GE/UK/US COMBAT VEHICLE FIRE CONTROL SYSTEMS REAL FIRING FIELD TESTS

Describes a firing test procedure to determine the hit probability of a complete combat vehicle system against well-defined reference targets. Tests are conducted under a variety of measurable and, if possible, reproducible conditions (e.g., combinations of modes, ranges, ammunition, courses, vehicles and targets).

ITOP 4-2-014 B227410 09/04/97

FR/GE/UK/US ARTILLERY SUBMUNITION (BOMBLET) TEST

Describes test procedures for determining the suitability and effectiveness for use of artillery delivered bomblets and covers testing of individual bomblets and bomblet loaded projectiles. Safety testing is addressed in ITOP 4-2-504(1).

ITOP 4-2-504(1) A274371 19/10/93

FR/GE/UK/US SAFETY TESTING OF FIELD ARTILLERY AMMUNITION

Describes procedures for safety testing of developmental and production separate-loading projectiles, semifixed cartridges, and propelling charges for field artillery. These procedures are mandatory for validating design safety, and are normally repeated to establish safety of the production item during initial production or first-article testing. Hazards related to ammunition handling, transport, launch, flight, and environmental conditions, and the compatibility of the ammunition with the weapon system in terms of safety are considered.

ITOP 4-2-504(2) B227177 08/04/97

FR/GE/UK/US SAFETY TESTING OF TANK AMMUNITION

Describes procedures for safety testing of ammunition for tank guns. Hazards related to ammunition handling, transport, launch, flight, and environmental conditions, and the compatibility of the ammunition with the weapon system in terms of weapon safety are considered. Additional background information is contained in Appendix A.

ITOP 4-2-504(3) 31/07/97

FR/GE/US SAFETY TESTING OF MORTAR AMMUNITION

Describes procedures for safety testing of mortar ammunition. Hazards related to ammunition handling, transport, launch, flight, and environmental conditions, and the compatibility of the ammunition with the weapon system in terms of weapon safety are considered. Additional background information is contained in Appendix A.

ITOP 4-2-510 20/11/97

GE/UK/US GENERAL TEST REQUIREMENTS FOR UNMANNED TARGET ACTIVATED WEAPONS (UTAW)

Describes guidance for testing the ability of Unmanned Target Activated weapons to withstand natural and induced environments encountered during storage, transport, handling, use, or maintenance. These conditions may be due directly or indirectly to interaction with the environment, transport media, or battlefield stimuli. Based upon experience and engineering judgement, procedures may be altered to accommodate unique applications or deployment, delivery, or employment methods.

ITOP 4-2-601 B228345 08/04/97

FR/GE/UK/US DROP TESTS FOR MUNITIONS

Describes techniques for conducting 12m drop tests of munitions (e.g., cartridges, projectiles, separate-loading propellants, in their shipping configuration, and 3m drop tests of unpacked ammunition of unpacked ammunition employed by combat vehicles; and provides general guidance for drop tests from other heights, including simulated parachute drops using a drop tower. (See Appendix A, Background).

ITOP 4-2-602 A271755 19/10/93

FR/GE/UK/US ROUGH HANDLING TESTS

Describes test procedures to simulate the transportation of items carried as unsecured cargo in trucks, or on the person of Army personnel. Items include munitions, rifles, rockets, radios, and mortars. Vibration testing, airdrop capability, and airdrop capability of explosives are not covered in this ITOP.

ITOP 4-2-606 A192185 10/04/97

FR/UK/US ESTABLISHMENT OF MASTER AND REFERENCE CALIBRATION ROUNDS

Describes techniques for conducting firings to establish master, reference, and interim calibration lots for artillery, tank, mortar, and recoilless rifle ammunition. It also discusses procedures for performing check firings and for assessing the effects of substitute components on a master, reference, or interim calibration lot.

ITOP 4-2-700 A295058 25/05/95

FR/GE/UK/US PROPELLING CHARGES

Describes procedures for determining the propellant charge weight to produce service velocity, velocity and pressure uniformity of the established charge, and effects of extreme temperatures on the performance of propelling charges used with guns, howitzers, mortars, and recoilless rifles.

ITOP 4-2-801 11/09/97

FR/GE/UK/US PROJECTILE UNBALANCE

Describes dynamic and static methods of obtaining data on projectile unbalance and procedures for computing dynamic and static unbalance. Applies to artillery projectiles.

ITOP 4-2-802 A235936 15/04/89

GE/US PROJECTILE SEATING AND FALLBACK

Describes a method for evaluating projectile seating and retention characteristics as related to projectile fallback within the weapon chamber. Describes techniques and tools for measuring seating and determining retention characteristics. Applies to separate-loading ammunition; does not apply to fixed and semifixed artillery ammunition.

ITOP 4-2-804 01/08/97

STICKER TESTING OF SEPARATE LOADING ARTILLERY AMMUNITION

Describes procedures for establishing the propensity for low zone projectile "stickers" during research and development tests of zoned charge weapon systems and ammunition. Criteria for the propensity to stick are established and recommendations for use restrictions provided.

ITOP 4-2-805 24/09/97

FR/GE/UK/US PROJECTILE VELOCITY AND TIME OF FLIGHT MEASUREMENTS

Describes techniques and equipment employed to measure instrumental velocity of projectiles, the velocity along the trajectory, and the time of flight of the projectile to known ranges, including techniques for translating instrumental velocity of projectiles into muzzle or striking velocity.

ITOP 4-2-809 31/12/97

FR/GE/UK/US RECOVERY OF FIRED AMMUNITION

Describes techniques for recovering ammunition fired as follows: vertically (83° to 90° weapon elevation); at long range into a prepared field and into water; point blank into sawdust, sand, or Celotex; at low velocity at a cloth target; by parachute; by long-tube/compressed air; and by water-rail deceleration. Applies to mortar, recoilless rifle, tank, field artillery, and anti-aircraft artillery ammunition. Excludes rocket warheads, missiles, and small arms projectiles.

ITOP 4-2-811 11/09/97

FR/GE/UK/US MEASUREMENT OF PROJECTILE RATE OF SPIN

Describes techniques for measuring projectile spin rate. Includes photographic method, paint smear method, pop-out-pin method, radio telemetry method, magnetic spin loop method (applicable to magnetizable projectiles), and flash radiography method (applicable primarily to aluminum sabots at time of emergence from gun tube). Includes spin rate computations for all methods.

ITOP 4-2-812 08/08/97

FR/GE/UK/US PENETRATION TESTS OF HEAT WARHEADS

Describes procedures for determining the penetration ability of high explosive antitank (HEAT) warheads during development and acceptance tests of antitank projectiles, missiles, and rockets. Included are static tests that determine penetration as a function of standoff distance and spin rate, and dynamic tests that provide data on armor penetration at various obliquities and standoff distance. Basic features of a typical HEAT warhead are described in Appendix A.

ITOP 4-2-813 A262272 30/03/93

GE/UK/US STATIC TESTING OF HIGH EXPLOSIVE MUNITIONS FOR OBTAINING FRAGMENT SPATIAL DISTRIBUTION

Describes procedures for determining the velocities, masses, and spatial distribution of sample fragments dispersed by the static detonation of high-explosive (HE) munitions in a horizontal position. This ITOP also includes the methodology required for determining the multiplication factors for adjusting the data to account for the complete spherical recovery and fragment spatial distribution.

ITOP 4-2-814 A158543 31/07/85

GE/US RICOCHET OF DIRECT-FIRE PROJECTILES

Describes procedures for determining the ricochet pattern of direct-fire projectiles fragments that are produced after striking earth at angles up to approximately 10 deg. The collected data (impact angle and velocity, ricochet angle and velocity, and total deflection angle) are used with ballistic models and safety factors to develop ricochet data that can be used to establish range danger areas. Ricochet tests are sometimes conducted against water and armor plate. Although based on proven procedures for large-caliber tank projectiles, the same basic procedures, modified for scale effects, can be used for small-caliber projectiles.

ITOP 4-2-820 04/08/97

GE/US HUMIDITY TESTS OF AMMUNITION

Describes procedures for determining effects of high and low humidity on ammunition in high temperature environments.

ITOP 4-2-822 15/07/97

FR/GE/UK/US ELECTRONIC MEASUREMENT OF AIRBLAST OVERPRESSURE

Describes methods for measuring airblast overpressures above 140 dB (1lb/in.2 or 7 kPa), resulting from detonation of explosives or firing guns. Describes the direct pressure method and the shock wave velocity method for measuring airblast. Includes techniques for calibrating transducers used for measuring airblast overpressure, and describes overpressure-measuring devices.

ITOP 4-2-826 A133889 12/09/83

GE/US SOLAR RADIATION TESTS

Describes methods for evaluating the effects of solar radiation and heat on military materiel and its operation through the use of environmental chambers. Includes a procedure for establishing an equivalent high temperature for use in environmental chamber high-temperature tests.

ITOP 4-2-829 A257489 23/10/92

FR/GE/UK/US VERTICAL TARGET ACCURACY AND DISPERSION

Describes procedures for conducting low-angle test firings against vertical targets to determine accuracy and dispersion of the ammunition for tank guns and artillery weapons. Such firings also permit observation of the strength of design of the projectiles and measurement of time of flight.

ITOP 5-2-619 A165395 06/12/96

FR/GE/UK/US SAFETY TESTING OF MISSILE AND ROCKET SYSTEMS EMPLOYING MANNED LAUNCH
STATIONS

Describes the procedures for safety testing of systems listed in the title during development and production testing. It includes tests of motors, warheads, and other components which would affect stockpile-to-launch safety, as well as complete system firing tests. Specifies tests which are conducted to provide the safety release and other safety data.

ITOP 5-2-620 24/10/97

FR/GE/UK/US SAFETY TESTING OF REMOTELY LAUNCHED MISSILES

Describes procedures for safety testing and evaluation of remotely launched missile systems. The ITOP addresses safety during system testing, storage, transport, handling, maintenance and firing. Emphasis is on serious personnel explosive hazards during non-combat deployment.

ITOP 6-2-020 B222589 10/03/97

FR/GE/US RADAR ANTENNA TESTS

Describes test procedures and methods for use in evaluating the performance of radar antennas. Includes checklist and data collection sheets.

ITOP 6-2-242 A273423 20/11/95

FR/GE/US ANALOG COMMUNICATION TRANSMITTER AND RECEIVER TEST PROCEDURES

Describes the necessary test procedures to be conducted for evaluating the performance of analog modulated (AM and FM) communication transmitters and receivers. Although this document provides a full test suite, the amount of testing conducted for a specific test item should be in accordance with its anticipated conditions of use and quality level. In order to provide a broad scope of application, this document does not impose any specification limits. Therefore, those limits may be derived from the equipment specifications or any established sources such as MIL-STD's or other national and European standards.

ITOP 6-2-246 A304503 12/10/95

FR/GE/US DIGITAL COMMUNICATION TRANSMITTER AND RECEIVER TEST PROCEDURES

Describes the necessary test procedures to be conducted for evaluating the performance of communication transmitters and receivers modulated by digital signals. Although this document provides a full test suite, the amount of testing conducted for a specific test item should be in accordance with its anticipated conditions of use and quality level. In order to provide a broad scope of application, this document does not impose any specification limits. Therefore, those limits may be derived from the equipment specifications or any established sources such as MIL-STDs, or other national and European standards.

ITOP 6-2-529

FR/GE/US RADAR RECEIVER PROCEDURES

Describes test methods used in evaluating the performance and characteristics of general types of radar receivers to include single or variable frequency receivers. The test methods serve as a guide in determining the overall efficiency of such equipment as a function of their design and their recorded performance.

ITOP 6-2-530 A265630 31/03/93

FR/GE/US RADAR TRANSMITTER PROCEDURES

Describes the test methods used in evaluating the performance and characteristics of general types of radar transmitters to include single or variable frequency transmitters. The test methods serve as a guide in determining the overall efficiency of such equipment as a function of their design and their recorded performance. This ITOP is limited to methods for measuring the performance of the radar transmitter under test as a major component. Some performance aspects of the transmitter can be tested only when configured as part of a total radar system.

ITOP 6-2-531 A265391 31/03/93

FR/GE/US RADAR RECEIVER PULSE COMPRESSION RATIO

Describes procedures for measuring radar receiver pulse compression ratio. Procedures described are limited to measuring the performance of the radar receiver under test as a major component. Receiver pulse compression ratio must be measured with the total radar system.

ITOP 6-2-532 B222610 10/03/97

FR/GE/US ANTENNA SCAN RATE TEST

Describes procedures for measuring the scanning rate(s) of a mechanically scanned antenna and the maximum angular velocity and time for a full scanning period in either plane (horizontal or vertical) of a sector scanning mechanically driven antenna.

ITOP 6-3-027 B118633 31/12/87

GE/US PASSIVE INFRARED SENSORS FOR INTERIOR APPLICATION

Describes techniques and equipment employed to test passive infrared sensors for interior volumetric surveillance.

ITOP 6-3-028 B118670 31/12/87

GE/US ULTRASONIC MOTION SENSORS FOR INTERIOR APPLICATION

Describes the necessary parametric considerations and functional test procedures for ultrasonic motion sensors (UMS) for volumetric surveillance.

ITOP 6-3-029 B118302 31/12/87

GE/US MICROWAVE MOTION SENSORS FOR INTERIOR APPLICATION

Describes necessary parametric considerations and functional procedures for microwave motion sensors for interior volumetric surveillance.

ITOP 6-3-030 B131065 30/03/89

GE/US BALANCED MAGNETIC SWITCH SENSORS FOR INTERIOR APPLICATION

Describes parametric considerations and functional test procedures for balanced magnetic switch (BMS) sensors for interior applications. This procedure includes the measurement of the Range of Adjustment (4.2.2), Sensitivity (4.2.3), Current Limitation (4.2.4).

ITOP 6-3-031 B131066 30/03/89

GE/US PASSIVE ULTRASONIC SENSOR FOR INTERIOR APPLICATIONS

Describes parametric considerations and functional test procedures for passive ultrasonic sensor (PUS) for interior applications. This procedure includes the measurement of the Bandpass characteristics, Sensitivity control range, Restoration time, Settling time, Alarm threshold (sensitivity).

ITOP 6-3-032 B131064 30/03/89

GE/US VIDEO MOTION SENSORS FOR INTERIOR APPLICATIONS

Describes necessary parametric considerations and functional test procedures for Video Motion Sensors (VMS) for interior applications. This procedure includes the measurement of the Sensor sensitivity, Sensor recovery time and target velocity, Response to change of brightness.

ITOP 6-3-033 B149030L 04/10/90

GE/US VIBRATION SENSORS FOR INTERIOR APPLICATIONS

Describes parametric considerations and functional test procedures for vibration sensors for interior applications. This procedure includes the measurement of sensor response to intended and nuisance signals for both inertial-switch and vibration-transducer types of sensors.

ITOP 6-3-035 B149452L 04/10/90

GE/US CAPACITANCE PROXIMITY SENSORS (CPS) FOR INTERIOR APPLICATIONS

Describes functional test procedures and parametric considerations for capacitance proximity sensors (CPS) for interior applications.

ITOP 6-3-036 B157612L 30/08/91

GE/US RF MOTION SENSOR FOR INTERIOR APPLICATIONS

Describes necessary parametric considerations and functional test procedures for radio frequency motion sensors (RFMS) for interior volumetric surveillance. This procedure includes the measurement of the following: transmitter output frequency and power; detection coverage (depending on separation of the receiver and the transmitter); sensor sensitivity; alarm restoration time; intermittent motion response; response to noise.

ITOP 6-3-038 B157651L 30/08/91

GE/US PORTED-COAX SENSORS FOR INTERIOR APPLICATIONS

Describes parametric considerations and functional test procedures for ported coaxial sensors (PCS) for interior applications. This procedure includes the measurement of the following: sensitivity, detection coverage, clutter, restoration time, and settling time.

ITOP 7-2-509(1) A278507 20/05/94

FR/GE/UK/US AIRDROP OF EQUIPMENT

Describes the testing procedures required to determine the ability of systems/items to withstand airdrop in compliance with the design requirements. Systems/items within the scope of this ITOP include automotive, missile support equipment (and components), marine equipment, weapons, inert ammunition, missile support equipment, and general stores dropped both onto land and into water. Additional safety measures and procedures must be applied to the airdrop of toxic, explosive, or other hazardous material. These, and the subject of EMC, are not addressed in this ITOP.

TOP 1-1-003 134892 01/09/83

ARCTIC PERSONNEL EFFECTS

Describes background information on the physiological effects of extreme cold on the human body. A brief overview of some of the physiological problems of operation in a cold environment and the procedures used to overcome these problems are provided along with the detailed techniques and requirements for tests involving the effects of a cold environment on personnel.

TOP 1-1-004 A279492 27/05/94

COLD REGIONS INSTRUMENTATION CONSIDERATIONS

Describes background information on the problems and adaptations associated with instrumentation, photographic and video equipment required for conducting tests in cold regions. Basic information and procedures are presented as general guidelines to planning and using instrumentation systems for cold environments.

TOP 1-1-005 A147703 13/10/84

ADAPTATION OF MILITARY MATERIEL FOR COLD REGIONS USE

Describes background information relative to the test, evaluation, and design of special cold weather adaptation kits and materiel requiring such kits. Describes current adaptation kit hardware and techniques for their use. Identifies problem areas. Discusses adaptation kits for use with tank/automotive materiel, aviation materiel, CBR equipment, generators, radio equipment, wire communications equipment, and weapons. Not applicable to construction, support, and service equipment except generators.

TOP 1-1-006 766261 10/08/72

DESERT ENVIRONMENTAL CONSIDERATIONS

Describes background information on the test of materials in a desert environment. Discusses desert environment characteristics, climate, temperature, solar radiation, humidity, terrain, desert types, desert terrain, classification, distribution, sand, dust, vegetation, and camouflage. Appendixes provide world extreme hot-dry temperature distribution and computation of Yuma degree-hour levels. Applies to desert testing. Not applicable to testing of food and clothing.

TOP 1-1-007 770035 01/08/73

DESERT MAINTENANCE CONSIDERATIONS

Describes background information relative to maintenance during desert environmental tests. Discusses general and unique maintenance requirements, problems, and evaluation guidance. Applicable to all materiel.

TOP 1-1-010 A027361 06/04/87

VEHICLE TEST COURSE SEVERITY

Describes a method of evaluating vehicle test course severity by committee assessment using accelerometers and by spectral analysis of course irregularities. Describes use of profilometer and conversion of profilometer data to power spectral density curves. Includes power spectral densities of vehicle endurance test courses at APG.

TOP 1-1-011 A103325 06/07/81

VEHICLE TEST FACILITIES AT APG

Describes APG facilities for testing wheeled and tracked vehicles including vehicular weapon systems. Included photographs and drawings showing test course dimensions and characteristics. Does not cover equipment and instrumentation used on the courses nor laboratory facilities except for climatic test chambers.

TOP 1-1-019 739588 29/11/71

ARMAMENT AND INDIVIDUAL WEAPON TESTING

Describes background information relative to testing of armament and individual weapons. Applicable to Volume 3, TOPs. Identifies cognizant agencies and offices. Discusses environmental testing, test plans, safety during testing, and acceptance test requirements.

TOP 1-1-045 A203736 30/01/89

GENERAL SUPPLIES AND EQUIPMENT TESTING

Describes general supplies and equipment according to functional use. Discusses equipment items in the categories of food and food preparation; fuels and servicing units; shelters; general and special purpose clothing and equipment; heating, cooling and ventilating equipment; photographic, printing and optical equipment; and miscellaneous support equipment. Discusses safety considerations, experimental design, instrumentation techniques, statistical techniques, and data reduction.

TOP 1-1-048 B083096L 01/05/84

DEFENSIVE TEST CHAMBER

Describes general background information for use of the defensive test chamber (DTC) at U.S. Army Dugway Proving Ground, Utah. Describes the physical and operational characteristics, equipment, instruments, technical capabilities, concept of use, and limitations of the DTC. Gives safety considerations for personnel protection, environmental impact, and decontamination requirements during test conduct.

TOP 1-1-051 755987 20/06/72

AMMUNITION AND EXPLOSIVES

Describes a method for evaluation of ammunition and explosives functional performance characteristics. Discusses preparation for test, facilities, and equipment required. Provides procedures for initial inspection, initial performance, tropic storage, transportation, handling, emplacement, functional performance, maintainability, and safety. Identifies data required and specifies analysis methods. Applicable to artillery and small arms ammunition, ammunition components, demolition materiel, mines, and pyrotechnics. Limited to field testing in the tropics.

TOP 1-1-052 770910 10/04/73

TROPICAL VEGETATION MEASUREMENTS

Describes a technique for predicting the number of trees in large areas of tropical forests from small samples. Also describes a method for estimating tree height from tree diameter. The techniques described have applications in evaluating the effects of vehicular mobility, weapons and/ or munitions, electromagnetic propagation, surveillance systems, and air delivered items in tropical forests.

TOP 1-1-054 A039084 29/03/74

GROUND-TO-GROUND TARGET DETECTION IN THE TROPIC FORESTS

Describes standard objective procedures for measuring ground-to-ground target detection ranges in tropic forests. Purposes for procedures are to determine the effect of a test item on an observer's ability to detect a standard target in the jungle, or to determine the detectability of a test item emplaced in the jungle. Procedures are provided separately for stationary and moving targets. Procedures may not be applicable when the target to be detected is large and cumbersome or very small and not capable of movement under its own power. Procedures are an excellent example of objectivity and realism in human factors measurement.

TOP 1-1-056 A046962 15/11/77

SOFTWARE TESTING

Describes 12 objective and generalized procedures for system level testing of software in tactical embedded-computer systems at TECOM field activities. Emphasizes the "early" areas of coordination with the developer to enable proper and complete test design, execution, and evaluation.

TOP 1-1-058 A122177 30/11/82

TEMPERATURE-MEASURING DEVICES

Describes various temperature-measuring devices used in conducting tests of Army materiel subjected to a range of temperature to ensure functioning in all environments.

TOP 1-1-059 A165326 30/11/85

SOLDIER-COMPUTER INTERFACE

Describes procedures for an HFE Analysis and walk-through, mission simulation, and interview guide. Included are criteria in the form of checklists This TOP is intended to be used for the Human Factors Engineering (HFE) Evaluation of the Soldier-Computer Interface (SCI) of systems tested.

TOP 1-1-061 A186917 04/11/87

CORROSION AND DETERIORATION TESTING IN HUMID TROPIC ENVIRONMENTS

Describes general procedures for corrosion and degradation tests of materials and materiel systems in humid tropic environments.

TOP 1-2-500 765456 07/02/73

TRANSPORTABILITY

Describes a method for evaluation of military equipment transportability characteristics. Discusses preliminary activities, facilities, and equipment required. Provides procedures for lifting and tiedown attachments; rail, highway, and marine transportability; terminals handling and movement; air portability, fixed and rotary wing; internal and external carried, to include airdropped materiel; shock; vibration; safety; human factors; and maintenance evaluation. Appendices provide railway loading procedures, highway vehicle and load limits, marine transport environmental factors and characteristics, aircraft capacities, shock and vibration environments during transport by rail, sea, and air.

TOP 1-2-502 A149003 19/12/84

DURABILITY

Describes procedures for planning and conducting durability tests. Applies to all items for which durability criteria exist or can be developed, and for which a durability test is required by test directive.

TOP 1-2-504 759219 31/10/72

PHYSICAL CHARACTERISTICS

Describes a method for evaluation of materiel physical characteristics. Discusses preliminary activities, facilities, and equipment required. Provides procedures for wheeled, tracked, and special purpose vehicles; armament and individual weapons; ammunition and explosives; missile and rocket systems; electronic, avionic, and communications equipment; aviation, air delivery equipment, and aircraft weapons subsystems; chemical and radiological equipment; construction, support, and service equipment; and general supplies and equipment. Applicable to all categories. Appendices provide procedures for center of gravity, moments of inertia; special measurements; and projectile characteristics.

TOP 1-2-510 A042716 02/03/76

LOGISTICS-OVER-THE-SHORE

Describes a method for evaluating logistics-over-the-shore capabilities of military equipment including cargo and vehicles. Describes subtests for watertightness, vehicle stability, marine transport, maneuverability, beaching capabilities, fording operation, soils trafficability, beach mobility, seashore exposure, performance under adverse conditions(high wind heavy rain, high waves, beach obstacles), and safety evaluation. Discusses site and facilities selection, safety factors, other test planning requirements and human factors, and maintenance evaluations. Applies to movement of cargo and vehicles, including towed, self-propelled, and by carrier, over the shore between ocean transportation and shoreside facilities etc.

TOP 1-2-511 B140188L 29/12/89

ELECTROMAGNETIC COMPATIBILITY REQUIREMENTS, SYSTEMS TESTING

Describes methods for instrumenting and testing Army material to determine the effects of electromagnetic, electrostatic, and lighting environments on the safety and/or operation of the materiel.

TOP 1-2-512 A293758 15/05/95

ELECTROMAGNETIC COMPATIBILITY TESTS

Describes guidance for the planning, execution, and reporting of grounding and bonding and Electromagnetic Compatibility (EMC) tests of electrical, electronic, and electromechanical equipment, subsystems, and systems.

TOP 1-2-605 A088657 28/08/80

BIREFRINGENT COATING TECHNIQUE, PHOTOELASTIC STRESS ANALYSIS

Describes the birefringent coating technique of photoelastic evaluation of surface stress. Includes test equipment and instrumentation, calibration tests, static and dynamic loading, and photographic requirements.

TOP 1-2-609 B066200L 01/01/81

INSTRUCTIONAL MATERIAL ADEQUACY GUIDE AND EVALUATION STANDARD (IMAGES)

Describes material be used for evaluation of draft technical manuals accompanying equipment or systems tested by TECOM. The technical manual evaluation criteria presented supersedes IMAGES Vol. II, dated May 78, It contains detailed requirements for the evaluation of draft technical manuals on equipment prepared in accordance with governing specification(s) MIL-M-63036A and MIL-M-63038B, and companion handbook MIL-HDBK-63038-1. These procedures are for determining if Army draft technical manuals are written in an adequate, accurate manner, and understandable at the intended user's level. It includes data collection forms for recording manual deficiencies, a classification of defects card, etc.

TOP 1-2-610 A226480 15/05/90

HUMAN FACTORS ENGINEERING PART I - TEST PROCEDURES PART II - HEDGE

Describes the Human Factors Engineering (HFE) assessment of all types of materiel and systems tested by TECOM. Supplementary sources of guidance are indicated when required. TOP 1-2-610 encompasses the HFE procedures for the testing of design, functional performance, and environmental considerations for the major test functions (operability, maintainability, transportability, portability/usability, erectability, and habitability) applicable to the HFE assessment.

TOP 1-2-612 A278230 15/04/94

NUCLEAR ENVIRONMENT SURVIVABILITY

Describes a general outline of the test and analysis procedures required to determine the effects of specified nuclear environment on Army materiel. The purpose of these test and analysis procedures is to ascertain the degree to which the Operational Requirements Document (ORD), Independent Evaluation Plan (IEP)/ Independent Assessment Plan (IAP) criteria, and Army Nuclear Hardening Criteria (NHC) are met.

TOP 1-2-613 A063571 09/11/78

NUCLEAR EFFECTS OF ARMY MATERIEL (BLAST)

Describes procedures for performing nuclear weapon blast effects tests on Army weapon systems and combat support materiel. Discusses types of blast facilities used to simulate the nuclear weapon blast environment. Covers test procedures, safety and instrumentation. Applies to vehicles (land, amphibious, tracked, wheeled), missile systems, self-propelled or towed guns, and electronic equipment.

TOP 1-2-616 A286376 11/11/94

TROPIC EXPOSURE TESTING

Describes general procedures for atmospheric field exposure of materials in a humid tropic environment and for measuring change in physical properties of the materials after exposure. It also describes the various exposure sites available at the U.S. Army Tropic Test Site.

TOP 1-2-618 A274593 29/10/93

INITIAL NUCLEAR RADIATION HARDNESS VALIDATION TEST

Describes the techniques, procedures, and general outline required to assess the effects of the initial nuclear radiation environment on Army material. All facets of initial nuclear radiation test preparation, test execution and test documentation are covered in this TOP.

TOP 1-2-619 A311704 31/07/96

NUCLEAR THERMAL & BLAST HARDNESS VALIDATION TEST

Describes the techniques, procedures, and general outline required to assess the effects of nuclear thermal and airblast environments on Army materiel. Test preparation, execution, and documentation are covered in this TOP. The nuclear thermal and airblast environments and effects are described in the appendices.

TOP 2-1-001 874023 10/07/70

TESTING WHEELED, TRACKED, AND SPECIAL PURPOSE VEHICLES

Describes background information relative to testing tactical land vehicles and certain special vehicles. Applies to volume 2, TOP's. General coverage of cognizant agency responsibilities, type tests, test management, plans and reports, and policy as pertains to methodology, facilities, and TOP's.

TOP 2-1-002 717986 15/07/68

AUTOMOTIVE LABORATORY INSTRUMENTATION

Describes background information on instrumentation as associated with testing engines, transmissions, and other power train components. Applicable to many fields. Basic coverage of the various techniques in power absorption and measurement, temperature measurement and control, pressure measurement, fluid flow, and dimensional measurement.

TOP 2-1-004 866463 30/12/69

TELEMETRY

Describes information on radio telemetry systems relative to collecting performance data from missiles and projectiles in flight or vehicles in motion; such as, switch opening or closing, time between events, operation of VT fuzes and fuze functioning, engine temperature, fuel flow, oil pressure, velocity, engine RPM, torque, strain, acceleration, and displacement. Discusses methods of transmission, efforts to standardize radio telemetry, radio frequency allocations, subcarrier bands, PAM/FM/FM communication, modulation, transmitter and receiver frequency allocations, ground (receiving) stations, and airborne (transmitting) stations.

TOP 2-1-005 206769 04/04/89

AUTOMOTIVE FIELD TEST EQUIPMENT AND INSTRUMENTATION

Describes field dynamo meters, load absorption trailers, and instrumentation capabilities. Identifies instrumentation for measuring draw bar pull, resistance to roll, temperature, pressure, road speed, torque, strain, stopping distance, fuel flow, load distribution, and toxic fumes. Discusses data recording instrumentation (van mounted) for shock and vibration, and sound pressure level measurements by radio telemetry or cable to test vehicle.

TOP 2-1-006 872806 19/05/70

MECHANICAL SHOCK

Describes mechanical shock, excitation, response, and shock effects. Discusses piezoelectric and strain resistance accelerometers, strain and displacement gages, and velocity pickups for measurement of shock. Prescribes oscillographic and/or magnetic tape recorders for collecting time history versus displacement, velocity, and acceleration data. Discusses data reduction and presentation in time and frequency domains. Excludes the means of imposing shock on the materiel involved.

TOP 2-2-014 759149 05/01/73

CARRIERS, FULL-TRACKED (AUTOMOTIVE)

Describes a method for evaluating full-tracked carrier physical and operational performance characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for initial inspection, servicing, vehicle characteristics, safety, endurance, durability, reliability, and test procedures.

TOP 2-2-020 764203 23/03/73

TRAILERS, SEMITRAILERS, AND DOLLIES

Describes guidance for testing of trailers, semitrailers, and dollies to insure conformance with required operational capabilities, development plans, and other guidance documents. By reference to official documents describes subtests involved in preparing test plans. Includes supplementary instructions on test planning, initial inspection and servicing, vehicle characteristics, safety evaluation, endurance, durability, and reliability.

TOP 2-2-021 A256278 22/07/92

TRAILER LANDING LEG DEVICES AND TOWING COMPATIBILITY

Describes guidance for testing landing leg devices, leveling jacks which serve as landing leg devices, and towing compatibility of trailers with prescribed prime movers, to determine whether they comply with Operational Requirements Document (ORD), Development Plans (DPs), System Specifications, and other guidance documents.

TOP 2-2-040 764772 21/03/73

MISSILE SUPPORT VEHICLES

Describes guidance for evaluation of missile support vehicle physical and operational characteristics. Identifies supporting tests, facilities, and equipment required. Discusses preparation for test requirements. Provides procedures for initial inspection, servicing, vehicle characteristics, safety, endurance, durability, and reliability. Applicable to wheeled and tracked vehicles such as self-propelled launched, loader transporter, launched trailer, and missile support truck.

TOP 2-2-106 764204 12/03/73

FORK LIFTS

Describes guidance for conducting development tests I, II (ET), and III of fork lifts. Applies to electric and engine driven fork lifts and to rough terrain fork lifts. Covers test planning, inspection, test team training, and vehicle run-in requirements; and technical performance, operational performance, and high and low temperature storage tests.

TOP 2-2-131 759924 26/04/73

RECOVERY VEHICLES, FULL-TRACKED

Describes a method for evaluation of recovery vehicle performance and operational characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for test preparation, initial inspection, vehicle characteristics, safety, hydraulic systems, endurance, durability, and reliability. Applicable to full-tracked recovery vehicles.

TOP 2-2-503 732337 15/06/66

MAINTENANCE (VEHICLE)

Describes guidance for evaluating vehicle maintenance based on frequency of maintenance services, labor (man-hours), ease of maintenance, analysis of service and adjustment, analysis of repair and replacement, cost of parts, adequacy of maintenance package, and safety of maintenance operations. Discusses project engineers' responsibilities and cumulative records required under temperate, adverse, arctic, tropic, and high altitude environmental conditions. Specifies acceptance-reject criteria for use if sample size precludes the use of MIL-STD-471. Provides vehicle design criteria for compatibility with supply objectives.

TOP 2-2-505 A176910 04/02/87

INSPECTION AND PRELIMINARY OPERATION OF VEHICLES

Describes procedures for pretest inspections and break-in operation of vehicles. Includes guidance for follow-up inspections during and after the test of the vehicle. Applies to wheeled, tracked, and special purpose ground vehicles such as construction equipment. Does not cover characteristics inspections.

TOP 2-2-508 A121978 24/11/82

AUTOMOTIVE SAFETY AND HEALTH HAZARD EVALUATION

Describes procedures to identify and evaluate real and potential safety and health hazards that exist in military tracked and wheeled vehicles. Referenced test procedures are taken in part from Federal Motor Vehicle Safety Standards (FMVSS) and several TOP's. Safety tests include the following procedures to evaluate existing and potential hazards; static vehicular stability, braking, steering, human factors, sound level, toxic gas level, stowage, safety aspects of maintenance, weapon system safety, overhead guards, and FMVSS requirements.

TOP 2-2-511 A043540 12/07/77

ROAD TESTS OF MOBILE WEAPONS

Describes a method of evaluating the capability of towed carriers, such as cannon carriages, air defense artillery mounts, and missile launchers, to withstand tactical movement without damage to the weapon or vehicle. Covers brake systems, slope performance, towing resistance, turning capability, endurance, vibration, and effects of deep water immersion. Does not cover tests of the armament.

TOP 2-2-512 718727 01/01/67

AIRBORNE VEHICLES

Describes procedures for evaluating the air portability and airdrop characteristics of automotive vehicles. Handling and loading characteristics, altitude, deceleration, suspension system, and static drop and post-drop/flight operability tests are included.

TOP 2-2-513 A278295 01/04/94

FOREIGN VEHICLES

Describes procedures for conducting automotive and armament testing of foreign wheeled and tracked vehicles.

TOP 2-2-520 876402 30/07/70

LOGISTICS-OVER-THE-SHORE (LOTS) (VEHICLES)

Describes a method for evaluating vehicles and associated equipment LOTS characteristics. Discusses requirements for operator training and familiarization, cargo handling equipment, physical characteristics initial inspection, inventory of basic issue items, kit installation, water tightness, and instrumentation before testing. Test procedures include vehicle stability in water, steering and maneuverability, cooling capacity, mobility (beach area, into and out of surf), toxic fumes, maintenance evaluation, human factors evaluation, safety, and value analysis.

TOP 2-2-537 723410 15/04/71

CARGO LOADING ADAPTABILITY (CLA)

Describes guidance for evaluating cargo vehicle loading adaptability. Defines cargo loading adaptability carriers, cargo, and type of operations. Discusses cargo considerations, terminal and loading aspects, and transporting procedures. Prescribes evaluation procedures relative to truck, aircraft ship, and railroad car carriers; gas liquid, packaged, boxed, bulk material, vehicle, and palletized cargo; interchange of cargo in the storage area and at air, rail, and vehicle terminals; and test vehicle acceptance of cargo, accommodation of materials handling equipment, and physical mating with the terminal.

TOP 2-2-539 A110502 15/01/82

WHEELED AND TRACKED VEHICLE FUEL VAPOR HANDLING CAPABILITY

Describes an overview of desert environmental testing required for evaluation of the fuel vapor handling capability of wheeled and tracked vehicles have gasoline-powered internal combustion engines.

TOP 2-2-601 A045343 20/06/77

ELECTRICAL SYSTEMS (VEHICLES AND WEAPON SUBSYSTEMS)

Describes procedures for evaluating vehicle electrical system performance including power supply for weapon and other subsystems. Discusses power load planning, test temperatures, initial inspections, and instrumentation. Describes tests at rated and 75 percent rated voltage for engine starting power and individual/cumulative internal component requirements. Other tests cover generator/alternator performance, electromagnetic interference, high/low temperature effects, water/humidity effects, reliability, and weapon subsystem demands. Applies to electrical systems of wheeled and tracked vehicles, helicopters, and small armed boats equipped with lead-acid batteries, nickel-cadmium batteries, or other special type batteries.

TOP 2-2-602 A091708 08/08/80

ACCELERATION; MAXIMUM AND MINIMUM SPEEDS

Describes a method of acceleration for achieving maximum and minimum speeds of tracked or wheeled vehicles.

TOP 2-2-604 A086956 18/07/80

DRAWBAR PULL

Describes procedures for evaluating vehicle power available for acceleration, towing, or hill climbing,. Defines drawbar pull. Includes procedures for hard surface, soil, and water tests. Discusses vehicle preparation, instrumentation method of computing results, data reduction, and presentation. Establishes curves for comparing performance with similar vehicles and for predicting gradeability. Applies to wheeled, tracked, and amphibious vehicles.

TOP 2-2-605 A265063 29/07/93

WHEELED VEHICLE TOWING RESISTANCE

Describes procedures for determining power losses attributable to the suspension system and running gear of wheeled vehicles, and the braking effect available for descending grades, by measuring vehicular resistance to towing forces.

TOP 2-2-607 A093823 13/01/81

COOLING SYSTEMS (AUTOMOTIVE)

Describes guidance on evaluating the cooling characteristics of engine, power train, and auxiliary components when subjected to full and part-throttle vehicle operations, repeated steering maneuvers, and exposure to extreme environments.

TOP 2-2-608 719084 15/01/71

BRAKING, WHEELED VEHICLES

Describes procedures for evaluating wheeled vehicle brake systems. Discusses test courses, instrumentation, and vehicle preparation. Provides procedures for safety evaluation; brake burnishing, holding, and stopping ability; recovery after immersion in water; trailer break way holding ability; maximum pedal effort; actuation and release time; pedal effort versus input pressure; and low temperature effects. Describes mountain high way test procedures for high temperature performance, fade, wear, and endurance characteristics. Discusses data reduction and presentation. Prescribes a system for recording test data.

TOP 2-2-609 A086957 18/07/80

STEERING

Describes procedures for evaluating vehicle steering systems. Describes cramping angle and steering ratio measurement. Includes tests for turning, overall steering performance, lane changing , drift, dead-engine steering, control on slopes and adverse terrain, and human factors evaluation. Applies to land steering of wheeled, tracked, and amphibious vehicles.

TOP 2-2-610 A086958 18/07/80

GRADEABILITY AND SIDE-SLOPE PERFORMANCE

Describes procedures for evaluating vehicle gradeability and side-slope performance. Discusses payload, inspection, vehicle performance, safety, and instrumentation. Includes procedures for calculating the critical grade angle before testing and for evaluating brakes, engine, transmission, fuel system, and steering performance during testing. Applies to wheeled and tracked vehicles.

TOP 2-2-611 A086988 25/06/80

STANDARD OBSTACLES

Describes a method for evaluating obstacle-negotiating capability. Describes procedures for bridging, wall climbing, trench crossing, frame twisting, and aircraft/landing-craft loading-ramp tests. Discusses obstacle courses to include a profile sketch of each. Excludes slope, fording, washboard, and other standard obstacle tests covered in other TOP's. Applies to all military vehicles. Addresses obstacles in AMC mobility model.

TOP 2-2-612 A086959 18/07/80

FORDING

Describes procedures for evaluating wheeled and tracked vehicle fording ability and the effectiveness of fording kits. Covers shallow water, deep, water, underwater, and submerged fording. Describes test courses and equipment; preparation of vehicles and accessories; safety hazards; and performance data including water ingress and egress capability, effects on vehicle operation on hand, and endurance. Discusses emergency exit practices and corrosive effects of saltwater and air. Limited to vehicle designed to negotiate a water obstacle with wheels or tracks in contact with the bottom.

TOP 2-2-613 A286591 16/12/94

ELECTROMAGNETIC INTERFERENCE TESTING FOR VEHICLES AND ELECTRICAL SUBSYSTEMS - NON-COMMUNICATIONS

Describes procedures for conducting Electromagnetic Interference (EMI) tests of Non-Communication Electronic Equipment (NCEE) and Mobile Equipment Power (MEP) sources.

TOP 2-2-614 A291466 28/02/95

TOXIC HAZARDS TESTS FOR VEHICLES AND OTHER EQUIPMENT

Describes details specified to requirements and conduct of tests governing the measurement and analyses (as pertains to human exposure) of concentrations of common toxic gas/metal compounds produced during equipment/systems operations including: weapons firing from combat vehicles; automotive operations; operation of fueled fired heaters; firing of rockets/missiles using either solid or liquid propellants; operation of fuel burning systems; and activation of fire extinguishing systems. Included are the associated air standards for air quality and exposure as well as requirements and general specifications/criteria governing the measuring instrumentation.

TOP 2-2-615 718687 10/08/66

SECURITY FROM DETECTION (VEHICLES)

Describes procedures for evaluating vehicle susceptibility to detection characteristics. Discusses preparation for test, instrumentation, limitations, and detection by sight, sound, and infrared techniques. Describes procedures for vehicle detection by size, silhouette, visible hot surfaces, smoke, exhaust flames, ice fog phenomenon, road dust, exterior lights during darkness, interior illumination leakage through openings, infrared equipment, noise characteristics, and ground signature. Provides a method for data reduction and presentation.

TOP 2-2-616 A098981 08/05/81

NIGHT PERFORMANCE OF COMBAT VEHICLES

Describes procedures for evaluating night performance of combat vehicles in the areas of mobility, interior illumination. fire control, and durability of illuminating components. Night fire control evaluation consists of pre-firing and firing tests to determine the degradation due to darkness of the resolving power, target-detection range, weapon-laying, and target-acquisition capabilities of the sighting systems, firing accuracy, and dispersion.

TOP 2-2-619 871765 21/05/70

SOFT-SOIL VEHICLE MOBILITY

Describes a system for evaluating vehicle soft-soil mobility characteristics Discusses test and standard (comparison) vehicle initial inspection, load installation, weight distribution, tires, physical characteristic data, instrumentation, test limitations, soil preparation, and meteorological data required. Describes procedures for drawbar pull measurements and crossing velocity in sand, loam, and clay. Excludes off-road mobility problems created by brush, trees, and solid objects.

TOP 2-2-620 A019244 13/11/75

RESISTANCE OF ARMORED VEHICLES TO SEVERE SHOCK

Describes a method for evaluating the resistance of armored vehicle fire control and other components to shock from KE projectile impacts and blast and fragmentation from exploding HE projectiles. Describes acceleration, strain, and deflection instrumentation. Tests include high energy impacts on bare armor and "sacrificial" armor, graduated energy impacts with proof projectiles, and static detonations of HE projectiles for blast and fragmentation effects. Describes shock data analysis procedures.

TOP 2-2-621 718007 14/05/68

VEHICLE COLLISION AND ACCIDENT SAFETY TEST

Describes a method for evaluating vehicle accident and collision safety limits. Prescribes pretest requirements for vehicle characteristic data, center of gravity, combat weight, load distribution, instrumentation, equipment, and facilities. Provides procedures for rollover and collision tests. Discusses data reduction and presentation.

TOP 2-2-623 A265436 02/04/93

TYPICAL REACTIVE ARMOR SAFETY TESTS

Describes methods for determining the explosive hazard classification of vehicle applique armor titles and for reaching a conclusion of insensitive munition if possible. A secondary objective is to determine the tile-to-tile detonation propagation effects by initiating the center tile of a matrix and observing the reaction of the surrounding tiles.

TOP 2-2-625 A198199 16/08/88

MUZZLE BLAST DAMAGE TO COMBAT VEHICLES

Describes testing procedures for evaluating the effect of muzzle blast and firing shocks on combat vehicles and their components.

TOP 2-2-626 763293 18/05/73

OVERLOAD TESTING (VEHICLE)

Describes a method for evaluation of vehicle, wheeled and tracked, performance and endurance characteristics under overload conditions. Identifies supporting tests, facilities, and equipment required. Provides procedures for safety, sensitivity, and uncovering weak points. Discusses test mileage, inspections, measurements, and loading. Applicable to vehicle and vehicle component structure.

TOP 2-2-650 A089535 18/07/80

ENGINE COLD-STARTING AND WARMUP TESTS

Describes procedures for evaluating the cold-starting capability of military engines with and without the aid of arctic kit engine heaters.

TOP 2-2-690 A312083 16/08/96

ARMY OIL ANALYSIS PROGRAM FOR VEHICLE TESTING

Describes the procedures for oil analysis as a part of vehicle testing.

TOP 2-2-700 A150143 24/01/85

LABORATORY TESTS OF RECIPROCATING INTERNAL COMBUSTION ENGINES

Describes procedures for evaluating performance and endurance of reciprocating internal combustion engines under laboratory conditions. Power train components such as transmissions and transmission steering devices are not in this TOP.

TOP 2-2-701 A032842 02/07/76

FUELS AND LUBRICANTS

Describes a method for evaluating military and lubricant compatibility with Army vehicles and a method for sampling and spectrometric analysis of lubricants for symptoms of metal wear or contamination. Describes equipment and facilities and basic test requirements. Provides tests for octane and cetane requirements; engine, transmission, and vehicle compatibility; cold starting; and hydraulic, gear oil, and grease systems. Includes a chart of typical fuels and lubricants for Army vehicles and equipment.

TOP 2-2-702 718051 19/01/66

EFFECTS OF ALTITUDE ON AUTOMOTIVE ENGINES

Describes a system for evaluating the effects of altitude on engine performance and power loss. Discusses preparation for test, instrumentation, facilities, equipment, test conditions, and performance requirements. Provides procedures for altitude chamber, simulated altitude chamber, and field tests. Describes data collection, reduction, and presentation. Applies to spark ignition and compression engines.

TOP 2-2-703 718010 19/01/66

LABORATORY TESTS OF POWER TRAIN COMPONENTS

Describes procedures for evaluating vehicle engine and power train performance and endurance characteristics. Discusses test preparation requirements for identifying and recording nomenclature, model, serial number, manufacturer, and capacity of components, and the type of lubricant or fluid to be pumped. This includes lot; batch; specification number; chemical analysis, when appropriate; inspection; gaging data, instrumentation; and equipment. Specifies data obtained during performance, endurance, and steering tests, such as speed, power input and output, fluid/lubricant temperature and pressure, environmental conditions, and operating time.

TOP 2-2-704 A029719 23/01/76

TIRES

Describes procedures for evaluating pneumatic tires for military service. Discusses test preparation requirements for tire, rim, and vehicle. Describes test procedures for endurance, temperature, bead slip, traction, lateral stability, and run flat. Provides a system for collecting and presenting tire wear data.

TOP 2-2-705 A111357 19/02/82

TRACKS

Describes procedures for testing tracks and their components.

TOP 2-2-706 718012 24/11/65

TRACTION DEVICES

Describes procedures for evaluating wheeled vehicle traction devices. Discusses requirements for test item identification, physical characteristics, assembly and installation data, test and control vehicle preparation, instrumentation, facilities, and restrictions. Provides procedures for installation, preliminary operations, traction, trafficability, durability and general mobility. Discusses a method for data reduction and presentation.

TOP 2-2-707 718013 20/04/66

KITS (VEHICLE)

Describes guidance for evaluating vehicular kits and defines a kit. Discusses preparation for tests, installation, performance, endurance, and safety evaluation. Specifies the procedure for MG mount, bulldozer, traction devices, fording, and climatic environmental kit tests. Discusses data reduction and presentation. Not applicable to vehicle modification kits.

TOP 2-2-708 A090590 18/07/80

VEHICLE PERSONNEL HEATER COMPATIBILITY

Describes procedures for evaluating the performance of personnel heater systems when installed in a vehicle. Procedures do not pertain to engine heaters or the establishment of heater operating characteristics.

TOP 2-2-709 718015 23/03/66

COMMUNICATIONS EQUIPMENT

Describes procedures for evaluating combat vehicle communications equipment compatibility relative to operation, space, and durability. Discusses procedures for storage and mounting space, ease of operation, antenna flexibility, electrical requirements, vehicle noise interference, operations, and durability in extended vehicle operations. Prescribes the test data required. Discusses data reduction and presentation. Applies to vehicle-mounted communications equipment.

TOP 2-2-710 A137873 07/02/84

BALLISTIC TEST OF ARMOR MATERIALS

Describes methods available for assessing the ability of armored vehicle armor to provide protection against attacking projectiles and land mines. Tests of the basic armor rather than tests of the vehicle are emphasized.

TOP 2-2-711 A278960 21/01/94

BALLISTIC TESTING OF ARMOR WELDMENTS

Describes ballistic tests to evaluate armor weldments for resistance to shock and penetration by attacking projectiles.

TOP 2-2-712 A177936 20/01/87

AUTOMOTIVE WINCHES

Describes procedures for evaluating automotive winches. Discusses preliminary test activities and testing conditions. Provides procedures for determining line speed, winch capacity, functional capabilities of system components, and endurance. Not applicable to winches associated with warehouse cranes, power cranes, and shovels.

TOP 2-2-714 A097561 07/04/81

TRACKED VEHICLE SUSPENSION SYSTEMS

Describes test to evaluate the performance of tracked vehicle suspension systems, including endurance, suitability for vehicle mission, and compliance with specifications.

TOP 2-2-715 A006501 23/09/73

PROTECTION BY ARMORED VEHICLES AGAINST KINETIC ENERGY PROJECTILES

Describes a computational technique for assessing the protection afforded by an armored vehicle against a specific threat (defined in the applicable ROC, DP, or other military requirements document) by a kinetic energy projectile. The attack conditions are limited to ground attack from conventional weapons. Computation is based on previously obtained ballistic data. Discusses the threat and the protection probability, rationale for the technique, special armor considerations, and prerequisites.

TOP 2-2-721 768011 09/05/73

FIELD TESTING OF AUTOMOTIVE ENGINES

Describes guidance for development testing of field performance of automotive engines installed in wheeled and tracked vehicles. Describes preliminary activities and requirements for initial inspection, servicing, and safety evaluation. Lists supporting tests including those applicable to engine performance under severe operating conditions. Provides supplementary instructions covering basic vehicle subtests and endurance, durability, and reliability. Designed primarily for reciprocating internal combustion engines but applicable to other types.

TOP 2-2-722 A125824 15/03/83

FRAGMENT PENETRATION TEST OF ARMOR

Describes techniques for evaluating armor resistance to attack by HE projectile fragments. Includes static detonations of shell against armor plate and armored vehicles and firing tests using projectile fragments, fragment simulators, and simulated fragments in a canister. Includes index of test data from static detonations of 150mm and 155 mm projectile fragments against armor, fragment characteristic tables, and techniques for calculating fragment perforation probability using Poisson distribution.

TOP 2-2-800 A273937 31/12/93

WHEELED VEHICLE CENTER OF GRAVITY

Describes procedures for determining the center of gravity (CG) of wheeled vehicles. The CG provides information relative to roll stability, transportability, and input for mobility model programs.

TOP 2-2-801 A102702 07/08/81

WEIGHT DISTRIBUTION AND GROUND PRESSURE (WHEELED AND TRACKED VEHICLES)

Describes a method for accurately determining weight distribution and ground pressure of wheeled and tracked vehicles.

TOP 2-2-802 A065165 22/01/79

STOWAGE

Describes procedures for evaluating the adequacy of on-equipment materiel (OEM) storage facilities provided in or on vehicles.

TOP 2-2-806 A286591 30/12/94

POWER TRAIN TORQUE MEASUREMENT

Describes methods for measuring torque in tracked and wheeled vehicle power trains.

TOP 2-2-808 A106358 01/10/81

FIELD SHOCK AND VIBRATION TESTS OF VEHICLES

Describes a method of evaluating shock and vibration characteristics of vehicles during operation over selected test courses. Describes procedures for measuring structural response and response of components, equipment, cargo, and personnel positions. Describes instrumentation and courses and provide guidelines for determining points at which three standardized levels of human exposure are reached.

TOP 2-2-812 A141177 08/05/84

INFRARED MEASUREMENTS OF VEHICLES AND WEAPONS

Describes techniques and instrumentation for measuring infrared radiation during development and production tests of military ground vehicles and weapons. Such measurements are made to determine infrared signatures of vehicles and temperatures of weapon tubes during a firing program. Graphs and diagrams are presented to indicate typical measurements, but are not intended to represent a particular test firing or evaluation.

TOP 2-2-815 A029317 19/06/75

RAIN AND FREEZING RAIN

Describes a method of evaluating the effects of rain, hail, splash, and freezing rain on Army equipment. Includes simulated free-falling and blowing rain and high-velocity impacts with raindrops. Describes test facilities. Applies to vehicles, equipment, ammunition, small arms, and clothing. Not applicable to large missiles and rockets, snow, sleet, high humidity, mud submerging, swimming, or slippage or tires on wet roads.

TOP 2-2-816 A067422 21/03/79

HIGH AND LOW-TEMPERATURE TESTS OF VEHICLES

Describes procedures for high and low-temperature tests of vehicles in test chambers and operational conditions. Discusses related tests such as temperature shock. Addresses requirements of MIL-STD-810 and AR 70-38. Discusses high and low temperature effects and provides rationale for the test temperatures.

TOP 2-2-817 A169034 01/06/86

TROPIC TESTING OF VEHICLES

Describes procedures for conducting mobility subtests in tropic environments. Facilities, instrumentation, test controls, and data required are described, in addition to test procedures for conducting soil tests (one-pass vehicle cone index, drawbar pull, motion resistance, and acceleration/deceleration), surface geometry tests (slope negotiation and discrete obstacle), vegetation tests (single-tree override, multiple-tree override, and grassland override).

TOP 2-2-819 A203374 31/01/89

WHEELED AND TRACKED VEHICLE AIR CLEANER ADEQUACY

Describes procedures for evaluating air cleaner adequacy for wheeled and track vehicles. The method is particularly appropriate for desert environmental testing, as large amounts of dust become airborne with the passage of vehicles due to low moisture content of the sand, silt, and clay soils characteristic of desert areas.

TOP 2-4-001 718044 12/05/69

DESERT ENVIRONMENTAL TESTING OF WHEELED AND TRACKED VEHICLES

Describes a system for evaluating vehicle operational characteristics in the desert. Describes procedures for test preparation, octane requirements, fuel vapor handling capability, compatibility with specification grades of fuel and lubricants, fuel consumption, engine cooling system, braking, drawbar pull, air cleaner adequacy, mobility, durability, exposure and storage, maintenance, security from detection, human engineering, and safety. Discusses data reduction and presentation. Defines desert testing terminology. Applied to wheeled and tracked vehicles except those intended for sheltered environments.

TOP 2-4-002 718045 10/07/69

ARCTIC ENVIRONMENTAL TEST OF TRACKED AND WHEELED VEHICLES

Describes methods for evaluating the suitability of tracked and wheeled vehicles in the arctic. Describes procedures for preoperational inspection, physical characteristics, operational suitability, performance characteristics, mobility, human factors, safety, and maintenance. Discusses data reduction and presentation. Limited to combat and transport vehicles operating in the arctic winter environment.

TOP 2-4-003 718789 22/01/71

WHEELED, TRACKED, AND GENERAL PURPOSE VEHICLES

Describes a method for evaluating vehicle operational characteristics in a tropical environment. Provides procedures for test preparation, operational performance, durability, maintainability, availability, reliability, safety, human factors, value analysis, surveillance, and battlefield day. Discusses data reduction and presentation. Applies to wheeled and tracked vehicles except those intended for sheltered environments.

TOP 2-4-004 A158758 24/06/85

COLD REGIONS LOGISTICS SUPPORTABILITY TESTING OF WHEELED, TRACKED AND SPECIAL PURPOSE VEHICLES

Describes methods and techniques necessary to perform a logistic supportability test of wheeled, tracked, and special purpose vehicles in a cold regions environment.

TOP 3-1-002 718229 25/01/67

CONFIDENCE INTERVALS AND SAMPLE SIZE

Describes background information relative to calculating confidence interval and sample size. Discusses confidence coefficient population characteristics, point estimate, and upper and lower confidence limits. Provides step-by-step examples of procedures for calculating confidence intervals in seven common situations, such as mean of a normal population with standard deviation known and unknown, standard deviation of a normal population with mean known and unknown, difference between mean of two normal populations of equal sample sizes and standard deviation known or unknown but equal, and the binomial probability of failure. Provides tables for ease in obtaining one or more factors.

TOP 3-1-003 A100415 02/06/81

METEOROLOGICAL DATA FOR TESTING

Describes methods for obtaining meteorological data. Includes definition of "standard atmosphere" and an example of a typical meteorological report to a test director.

TOP 3-1-005 741811 01/03/72

FIELD ARTILLERY STATISTICS

Describes guidance for planning tests and analyzing test data. Discusses all aspects of statistical procedures associated with service testing to include concepts, median, mean, standard deviation, proportion, accuracy, precision, reliability, and maintenance evaluation. Applies to field artillery materiel. Excludes theoretical background for statistical tests.

TOP 3-1-006 127235 20/04/83

STRAIN MEASUREMENT - UNDIRECTIONAL

Describes procedures for measuring dynamic strains that occur during weapon firing and vehicle tests when the principal direction of the strain is known. Includes the use of foil and wire resistance strain gages.

TOP 3-2-030 A177102 13/03/87

GRENADE LAUNCHERS

Describes a method for evaluating grenade launcher operational and functional performance characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for test planning, malfunctions, initial inspection, safety, assembly, disassembly, dispersion, velocity, accuracy, endurance, attitudes, cookoff, extreme temperatures, temperature-humidity, icing, mud, water spray, sand and dust, compatibility, and maintenance evaluation.

TOP 3-2-045 136335 21/12/83

AUTOMATIC WEAPONS, MACHINE GUNS, AND HAND AND SHOULDER WEAPONS

Describes procedures for testing automatic weapons, machine guns, and hand and shoulder weapons to determine their conformance with requirements documents.

TOP 3-2-046 A329966 31/07/97

LAND NAVIGATION AND POSITION SYSTEMS

Describes procedures for conducting technical performance tests of land navigation and positioning systems. It is modeled around the Modular Azimuth Positioning System Hybrid (MAPS Hybrid) but is applicable to all land-based navigation systems including those using the Global Position System (GPS). This TOP incorporates procedures that require automated data collection instrumentation and a reference system that will provide medium-to-high position/attitude accuracy.

TOP 3-2-050 A267158 02/04/93

TESTING OF MORTAR SYSTEMS

Describes procedures for determining the operational capabilities of mortar systems under a variety of environments.

TOP 3-2-051 A277463 31/03/94

AUTOMATIC LOADERS FOR TANK SYSTEMS

Describes procedures for safety testing and evaluation of developmental and production autoloaders for tank systems. The purpose of the TOP is to provide uniform guidance for evaluating the safety and performance of an autoloader and the effect it has on the integrity of the handled ammunition.

TOP 3-2-056 876256 24/09/69

ROCKET LAUNCHERS (GROUND-TO-GROUND)

Describes a system for evaluating rocket launcher physical and performance characteristics. Discusses preoperational requirements for initial inspection, physical and operating characteristics, instrumentation, and facilities. Discusses procedures for safety evaluation, selection of rockets, ambient firing tests, low- (-50 °F) and high- (+165 °F) temperature storage and firing, rain, freezing rain, noise, blast, sand, dust, humidity, salt spray, roadability, transportability, rough handling, recoil reaction, accuracy, and manned firing tests. Applies to infantry and artillery rocket launchers. Not applicable to aircraft-mounted launchers.

TOP 3-2-066 A131239 05/08/83

RECOILLESS RIFLES

Describes procedures for evaluating recoilless weapon performance characteristics; includes planning, physical measurements, proof tests, stress-strain, cookoff, rate of fire, high and low temperatures (74 °C and -46 °C), durability and endurance, rough handling and vehicle transport, flash tests, and human factors evaluation. Identifies supporting tests.

TOP 3-2-500 A107310 09/11/81

WEAPON CHARACTERISTICS

Describes procedures for uniform collection of physical characteristics of guns and howitzers, mortars, small arms, recoilless rifles, and small rocket launchers.

TOP 3-2-503 A092174 14/09/82

SAFETY EVALUATION OF FIRE CONTROL - ELECTRICAL & ELECTRONIC EQUIPMENT

Describes procedures for evaluating the safety of electrical and electronic equipment in fire control systems for tank weapons and field and air defense artillery. Includes checklists as guides for identifying electrical and electronic hazards, mechanical hazards, etc.

TOP 3-2-504 A045340 01/03/77

SAFETY EVALUATION OF HAND AND SHOULDER WEAPONS

Describes procedures for evaluating the safety of hand and shoulder weapons during developmental testing. Covers performance tests leading to a safety release and includes guidance for safety evaluation throughout all phases of developmental testing. Applies to rifles, pistols, submachine guns, shotguns, and grenade launchers. Excludes pyrotechnic devices.

TOP 3-2-510 717532 16/05/68

ARTILLERY CARRIAGES AND MOUNTS

Describes a method for evaluating artillery carriage and mount operating characteristics. Discusses preparation for test, instrumentation, and facilities. Describes procedures for force measurement, carriage, fire control equipment, lighting equipment, range drum, and elevating quadrant tests. Prescribes a system for data reduction and presentation. Excludes proof firing, special firing, and road tests.

TOP 3-2-518 A195888 16/06/88

SUBCALIBER GUNS

Describes a system for evaluating subcaliber guns. Discusses requirements for initial inspection, weapon preparation, physical characteristics, instrumentation, and facilities. Prescribes procedures for prefiring, firing and data collection. Provides a method for data reduction and presentation. Applies to internally and externally mounted subcaliber guns.

TOP 3-2-531 876180 03/08/70

VULNERABILITY OF WEAPONS

Describes a method for evaluating weapon vulnerability to enemy action. Discusses requirements for test preparation, operational performance, instrumentation, facilities, and data required. Prescribes procedures for planning vulnerability study areas to include bullet splash, component immobilization, shock, blast, air attack, projectile penetration, welded joint weakness, and fuel fires. Provides procedures for evaluating vulnerability of armored self-propelled weapon systems, gun tube safety, component, and area. Applies to artillery, recoilless rifles, and tank guns. Not applicable to small arms.

TOP 3-2-602 A131050 28/07/83

GUN STABILIZATION SYSTEMS (VEHICULAR)

Describes a method for evaluating vehicular gun stabilization system performance over standardized test courses. Includes test for frequency response, hull displacement, and stabilizer performance in firing and nonfiring modes with both stationary and moving targets. Appendixes provide test summary charts.

TOP 3-2-607 A139813 21/04/83

DETERMINATION OF RANGE DANGER AREAS

Describes guidance for acquiring data to establish danger areas for training, target practice, and combat when using conventional weapons and ammunition, small rockets, and guided missiles.

TOP 3-2-608 A111158 16/02/82

TERMINAL EFFECTIVENESS OF ANTIPERSONNEL FRAGMENTING PROJECTILES

Describes procedure for determining terminal effectiveness of high-explosive fragmenting projectiles against human targets. Includes methods of computing lethal area and fractional coverage.

TOP 3-2-609 A176600 03/02/87

CHEMICAL COMPATIBILITY OF NONMETALLIC MATERIALS IN SMALL ARMS SYSTEMS

Describes procedures for evaluating chemical compatibility of nonmetallic materials used in small arms and ammunition.

TOP 3-2-610 734305 01/11/71

FIRE CONTROL ACCURACY TESTS WITH A DYNAMIC TESTER

Describes a method for evaluation of fire control system accuracy. Describes pretest requirements for instrumentation and equipment, familiarization with dynamic tester, target course selection, weapon system-dynamic tester interface, preparation of data storage medium and connecting the tester. Provides procedures for tracker response and control with an operator, computer lead accuracy, tracker and computer accuracy with simulated operator, and system overall accuracy with a real operator. Limited to air defense systems.

TOP 3-2-616 717535 12/06/68

RADIO FREQUENCY RADIATION HAZARDS TO PERSONNEL

Describes a method for evaluating electromagnetic radiation hazards. Discusses biological effects of radiated radio frequency energy, common radar systems, safe distance, instrumentation, component identification, and safety precautions. Describes procedures for pretest operations and power density measurements. Prescribes a system for data reduction and presentation. Applies to safety from radio frequency energy in the spectrum from 100mHz to 40gHz. Excludes biological effects of exposure to ionizing radiation (such as X-rays and gamma rays), psychological stresses, neurological effects, and long-term genetic effects.

TOP 3-2-700 A068182 08/03/78

BALLISTIC CORRECTION SYSTEMS

Describes nonfiring tests to determine the accuracy of ballistic correction devices in supplying proper super elevation and lead angle data to a fire control system when the weapon is laid to fire at a given range. Applies to ballistic correction systems contained in tank weapons and late model self-propelled artillery.

TOP 3-2-702 717543 20/04/66

OPTICAL RANGE FINDERS

Describes a system for evaluating range finder performance characteristics. Discusses factors influencing accuracy and precision. Prescribes test preparation requirements for inspection, adjustment, component functional check, experienced personnel, facilities and equipment. Provides procedures for system internal correction, uniformity, accuracy performance, ranging, durability, utility, shock, and postoperation tests. Discusses calculations, data reduction and presentation, range finders, and the selection of operators. Prescribes a method for presenting results. Applies to tank-installed optical range finders.

TOP 3-2-706 717538 24/06/68

NIGHT VISION DEVICES

Describes a method for evaluating night vision devices. Discusses passive and active devices. Prescribes pretest requirements for component identification, inspection, instrumentation, facilities, and equipment. Provides procedures for safety evaluation, magnification, field of view, resolution, luminous gain, reticule accuracy, focus, operational range, electrical characteristics, transportation vibration, and environmental tests (such as immersion, high and low temperature, solar radiation, humidity, altitude, salt spray, rain, sand, and dust). Prescribes a system for data reduction and presentation.

TOP 3-2-707 717270 10/08/66

EJECTOR CAM TESTS

Describes a system for evaluating cartridge case ejection mechanisms. Describes preoperational requirements for instrumentation, equipment, facilities, and experienced gunners. Discusses typical problems encountered during ejector cam tests. Provides procedures for measuring ejection velocity at various elevations (zero to maximum) and temperatures (+145 °F to -65 °F) for all types of ammunition. Discuss calculations, acceptable velocity limits, data reduction, and presentation. Applies to semiautomatic artillery weapon components which directly influence case ejection velocity.

TOP 3-2-709 A189551 14/12/87

FIELD ARTILLERY FIRE CONTROL SIGHTS

Describes a method of evaluating the performance of optical-mechanical sighting systems used to lay the major armament of towed and self-propelled artillery. Includes test preparation; techniques for checking boresight retention, alignment of panoramic telescope, synchronization, and other features; road tests on rugged test courses; firing tests covering ambient and extreme temperatures, solar radiation, and night performance; rain test; and humidity test. Describes methods for determining azimuth error, testing accuracy of cant corrector, and illustrating test results. Does not cover optical quality of sights.

TOP 3-2-711 A122176 02/12/82

SAFETY EVALUATION OF RADIOACTIVE COMPONENTS OF MATERIEL AND PROCEDURES

Describes procedures for evaluating the radiological safety of materiel components that emit ionizing radiation. Includes shock, vibration, and climatic tests and a test to determine whether combined storage will result in radiation or contamination.

TOP 3-2-801 717271 27/10/65

MEASUREMENT OF INTERNAL DIAMETERS OF CANNON

Describes a method for measuring cannon internal diameters. Discusses pullover and star gages, uses, application, operating principles, selection of equipment, preparation for gaging, and gaging procedures. Describes procedures for bore and chamber measurements. Not applicable to cannon chamber slopes with a diametrical taper of .100 inch or greater.

TOP 3-2-804 717373 27/10/65

IMPRESSIONS AND CASTS OF CANNON BORES

Describes a system for examining and evaluating bore conditions. Discusses preparation for test, and equipment required. Provides procedures for Gutta-Percha impressions, sulfur and metal alloy casts, data reduction, and presentation.

TOP 3-2-806 A136347 20/12/83

METALLURGICAL AND MECHANICAL TESTS OF MATERIALS

Describes methods of evaluating the physical properties of components and causes of failures. Describes equipment required and procedures for chemical analysis (wet method, spectrographic and X-ray emission spectrographic analysis); macroscopic examination (gross structure and fracture area); microscopic examination; and mechanical testing including tension tests, hardness tests (Rockwell, Brinell, Tukon, Scleroscope, and Vickers), notched-bar impact tests (Charpy and Izod), fracture toughness tests, and fatigue tests.

TOP 3-2-807 A162266 05/12/85

NONDESTRUCTIVE TESTING OF MATERIALS

Describes standard techniques and facilities for evaluating surface and subsurface characteristics of metallic/nonmetallic materials. Identifies current nondestructive test methods and ultrasonic test techniques applicable to cannon tubes, cast armor plate, welded joints, and projectile fuzes, vehicle track shoes, and other items in which detection of cracks, voids, corrosion, and thickness variations is important.

TOP 3-2-809 A102509 15/06/81

BRITTLE LACQUER TECHNIQUE OF STRESS ANALYSIS

Describes the brittle lacquer method for analyzing strain/stress in materiel.

TOP 3-2-810 A110094 21/01/82

WEAPON CHAMBER PRESSURE MEASUREMENTS

Describes instrumentation and procedures for measuring pressure within weapon chambers during firing tests.

TOP 3-2-812 717539 23/02/66

FIELD OF VISION - VEHICLES

Describes a method for evaluating procedures to determine the field of vision for transport vehicle drivers and combat vehicle crew members. Describes procedures for test preparation, locating, and recording data for combat transport vehicles. Discusses vision distances, lateral and elevation angles, and adequacy of mirrors.

TOP 3-2-813 A152631 22/03/85

FIELD OF FIRE

Describes procedures for determining the field of fire for vehicle-mounted primary and secondary armament (e.g., tank guns, armored personnel carriers).

TOP 3-2-815 A029073 24/02/75

RECOIL MOTION MEASUREMENT

Describes the selection, setup, and operation of the various instrumentation used for measuring recoil motion as part of weapon recoil system evaluation.

TOP 3-2-816 A056118 25/08/78

HOP FIRING

Describes procedures for measuring the carriage motion of towed and self-propelled weapons during firing and the final carriage displacement after firing. Applies to towed and self-propelled artillery.

TOP 3-2-820 717377 25/01/67

IN-FLIGHT DISPERSION PATTERN MEASUREMENTS

Describes a method for evaluating procedures used in obtaining photographic instrumentation measurements of in-flight dispersion patterns of automatically fired projectiles. Describes procedures for determining the in-flight dispersion patterns of projectiles fired at high angles using photographic methods, reducing the data, and graphically presenting the information collected. Discusses test preparation, emplacement of motion picture cameras and mounts, target designation, prefire checks, and firing sequence.

TOP 3-2-821 717381 28/12/66

BALLISTIC DATA FOR BOOSTED PROJECTILES

Describes a method for evaluating procedures used in obtaining trajectory data during the boosted portion of projectile flight. Describes procedures for test preparation, selection of site, emplacement of the weapon and instrumentation, training test personnel, and safety. Discusses velocimeter data, detecting camera or sky screen, bore sight, or cinetheodolite, and engineering logbook. Applies to boosted projectiles but not to hemispherical, conical, or finned-based configurations.

TOP 3-2-823 A153082 15/03/85

RANGE FIRING OF CLOSE-SUPPORT ROCKETS AND MISSILES

Describes procedures for evaluating technical performance of close support rockets and missiles through range firings. Includes guidance for ground-to-ground firings of fin-stabilized and some spin-stabilized rockets and missiles.

TOP 3-2-824 717383 05/06/69

FLIGHT TESTS OF ANTITANK MISSILES

Describes procedures for test preparation of small, guided antitank missiles with a wire link, optical-infrared tracker link, and radio link guidance systems. Discusses inspection and measurements, circuitry checkout, missile firing tests, selection of equipment, familiarity of test personnel with the item, safety, instructional material, launcher emplacement, and photographic and electrical instrumentation. Applies to vehicle-mounted or infantry-type, ground launched missiles and air-launched missiles.

TOP 3-2-825 A033780 02/11/76

LOCATION OF IMPACT OR AIRBURST POSITIONS

Describes techniques for determining the location of impacts or airbursts of projectiles and rockets. Covers spotting of flight termination on or above land and water and procedures for single- and multiple-fired rounds. Describes equipment and facilities, including the use of one or several cameras, one to four observation towers, and digital recording observation theodolites. Covers measurement and data reduction procedures. Applies to artillery, mortar, and rocket ammunition, and tank and recoilless rifle ammunition when used as artillery.

TOP 3-2-826 A156982 15/07/85

KINEMATIC TEST OF SMALL ARMS

Describes methods for evaluating motion characteristics of small arms components by means of displacement-time camera and five-wire and three-wire ballistic pendulums. Covers measurement of component displacement relative to time and distance and measurements of impulse and recoil.

TOP 3-2-830 A032004 30/06/76

COLD REGIONS STABILITY TEST OF INDIRECT FIRE ARTILLERY WEAPONS

Describes methods for determining the stability of indirect-fire weapons fired from varied terrain types incurred in northern regions during the various seasons. Requirements for facilities and test instrumentation are included.

TOP 3-2-831 A045766 15/09/77

CLEANING AND PRESERVING OF WEAPONS

Describes procedures for cleaning weapons after firing and for preserving weapons for storage and shipping. Lists specifications for materials used in processing. Applies to artillery cannon (including mortars), recoilless rifles, and small arms.

TOP 3-4-001 867021 14/11/69

DESERT ENVIRONMENTAL TESTING OF ARMAMENT AND INDIVIDUAL WEAPONS

Describes a method for evaluating individual weapon and armament characteristics in desert environments. Describes procedures for test preparation, preoperational inspection, determining exposure effects, functional capabilities, security from detection, maintenance, human factors, safety, etc. Applies to individual small arms (not crew served), light and medium weight crew-served weapons, and towed and self-propelled weapons.

TOP 3-4-003 720559 28/01/71

ARMAMENT AND INDIVIDUAL WEAPONS

Describes a method for evaluating armament and individual weapons physical and performance characteristics relative to capability of functioning in tropic environments. Describes procedures for test preparation, initial inspections and operation, determining operational performance, short-term storage and surveillance or long-term storage effects, maintenance, safety, human factors, security from detection, and value analysis. Discusses instructional material, schedules, safety release, facilities, test personnel training, and simulated combat missions. Describes data reduction and calculation of maintenance indicators. Applies to use of armament and individual weapons in the tropic environment.

TOP 3-4-004 717385 29/05/69

ARCTIC ENVIRONMENTAL TEST OF INDIVIDUAL WEAPONS RIFLES (SEMI-AUTO AND AUTOMATIC), AND PISTOLS

Describes a method for evaluating individual weapons physical and performance characteristics in the arctic environment. Describes procedures for test preparation, preoperational inspection, firing tests, position disclosing effects, functional and operability/portability, air transportability, human factors, safety, and maintenance. Discusses data reduction and presentation. Applies to the use of rifles and pistols in the arctic environment.

TOP 3-4-005 720968 29/05/69

ARCTIC ENVIRONMENTAL TEST OF GRENADE LAUNCHERS

Describes a method for evaluating grenade launchers physical and performance characteristics in the arctic environment. Describes procedures for test preparation, preoperational inspection, firing, position disclosing effect, factors, and maintenance. Discusses test personnel training, instruction materials, selecting test equipment and record forms, ammunition, storage and meteorological conditions and firing tests. Applies to the use of grenade launchers in the arctic environment.

TOP 3-4-006 717384 10/03/69

ARCTIC ENVIRONMENTAL TEST OF AUTOMATIC CREW-SERVED WEAPONS

Describes a method for evaluating automatic crew-served weapons physical and performance characteristics relative to functioning in arctic environments. Describes procedures for test preparation, preoperational inspections, determining ease of disassembly/assembly, handling, firing, position disclosing effects, functional and operational suitability, portability, air delivery, human factors, and maintenance. Discusses test personnel preparation, review of instructional materials, selecting test equipment, and safety. Describes data reduction and presentation. Applies to crew-served weapons under arctic conditions.

TOP 3-4-007 867047 24/11/69

ARCTIC ENVIRONMENTAL TEST OF RECOILLESS WEAPONS

Describes a method for evaluating recoilless weapon physical and performance characteristics in the arctic environment. Describes procedures for test preparation, preoperational inspection, firing tests, position disclosing effects, functional and operational ability, portability, human factors, and maintenance. Discusses test personnel preparation, instructional materials selecting test equipment and forms, safety, ammunition, storage and meteorological conditions, and firing tests.

TOP 3-4-008 717277 10/07/69

ARCTIC ENVIRONMENTAL TEST OF INDIRECT FIRE WEAPONS (MORTAR)

Describes a method for evaluating mortars physical and performance characteristics in the arctic environment. Describes procedures for test preparation, firing tests, position disclosing effects, functional and operational suitability, human factors, and maintenance. Discusses test personnel preparation, instructional materials, selecting test equipment and records, storage and meteorological conditions, and safety. Describes data reduction and presentation.

TOP 3-4-010 A130255 11/04/83

COLD REGIONS TEST OF DIRECT FIRE UNGUIDED (BALLISTIC) WEAPONS (TANK AND ANTI-TANK WEAPONS)

Describes procedures of testing of unguided tank and anti-tank weapons in basic cold, cold, and extreme cold (C1, C2, C3) environments as defined in AR 70-38. Includes bore sight and zero, dispersion, jump firing, target engagement, tracking and hit performance, obscuration, human factors, maintenance evaluation, reliability, and safety.

TOP 3-4-011 A138236 07/10/83

COLD REGIONS LOGISTIC SUPPORTABILITY TESTING OF ARMAMENT AND INDIVIDUAL WEAPONS

Describes methods and techniques necessary to perform a logistic supportability test of armament and individual weapons in a cold regions environment.

TOP 4-1-001 879093 04/12/70

TESTING AMMUNITION AND EXPLOSIVES

Describes a list of commodities covered by TOPs along with a list of cognizant agencies and offices concerned with ammunition testing. Also provides background information concerning environmental testing, preparation of test plans, safety during testing, and acceptance test procedures. Includes list of references for ammunition testing.

TOP 4-1-003 141851 18/05/84

ORDER OF FUNCTIONING

Describes information for determining the order of function of explosive charges and types of functioning (detonation or deflagration). Detonation is high-order functioning, and deflagration is low-order functioning. It also provides analysis on explosive functioning in the air, on land, after penetrating armor plate and within weapon tubes.

TOP 4-2-012 A126789 07/04/83

MORTAR AMMUNITION

Describes procedures for testing and evaluating mortar ammunition to ensure compliance with requirements documents. Includes accuracy and dispersion, fuze sensitivity, safety testing, reliability, human factors, logistic supportability, and fragmentation.

TOP 4-2-013 726349 01/07/71

RECOILLESS RIFLE AMMUNITION

Describes a method for evaluating recoilless rifle ammunition. Provides procedures for test preparation, safety evaluation, accuracy, reliability, lethality, plate penetration, environmental effects, human factors, maintenance evaluation, and weapon calibration. Not applicable to service, field environmental, or nuclear warhead testing.

TOP 4-2-015 723025 01/03/71

CLOSE-SUPPORT ROCKETS AND MISSILES

Describes test guidance for close-support rockets and missiles such as artillery rockets up to approximately 6 inches in diameter shoulder-held, bazooka-type, and antitank rockets; antitank guided missiles; and shoulder-fired, surface to air guided missiles. Included subtests are physical examination, static motor tests, fuze tests, warhead tests, range-firing tests, safety evaluation, environmental and rough handling tests, pendulum recoil tests, noise and blast measurements, toxic gases, vulnerability to bullets, reliability, and maintenance and human factors evaluations. Excludes testing of launchers, guidance systems and shaped charged warheads.

TOP 4-2-016 A056146 12/06/78

AMMUNITION, SMALL ARMS

Describes a method for evaluating small arms ammunition. Describes tests for fuzed and nonfuzed service ammunition including initial inspection, physical measurements, safety evaluation, fragmentation-lethality, accuracy and dispersion, time of flight, tracer evaluation, flash, smoke, waterproofness, salt-fog, temperature-humidity, sympathetic detonation, armor penetration, fungus, and human factors engineering. Includes tests for physical and operational characteristics of blank and dummy ammunition. Applies to fixed rounds of ammunition from cal .22 (or smaller) to 30-mm. Does not cover 40 mm shoulder-fired grenades which are included in another TOP.

TOP 4-2-017 A088611 27/08/80

DISINTEGRATING PROJECTILES

Describes a method of evaluating the performance of disintegrating projectiles used for troop practice firings and air defense test firings. Includes safety of handling, storing, firing, and transporting. Describes procedures for calculating probabilities of number and location of projectile pieces that fall.

TOP 4-2-018 A262919 06/04/93

RAIL LAUNCHED MUNITIONS

Describes procedures for using either a fixed or portable ballistic rail to launch dynamically-detonated munitions.

TOP 4-2-025 A268954 02/06/93

INSENSITIVE MUNITIONS (IM) TESTS

Describes test methods to determine explosive safety and insensitive munitions (IM) characteristics for all non-nuclear munitions, munition subsystems and explosive devices to be fielded by the U.S. Army, and to synthesize all hazard-assessment tests recommended by MIL-STD-2105A and the guidance of the U.S. Army supplement to MIL-STD-2105A (Navy) into a single TOP for IM testing.

TOP 4-2-045 A151272 26/02/85

DEMOLITION-INITIATING EQUIPMENT

Describes procedures for testing demolition-initiating equipment. Includes explosive and nonexplosive items used to detonate explosive charges.

TOP 4-2-055 718711 04/12/70

FUZES

Describes test methods for evaluating technical functions of ammunition fuzes for artillery, mortar, and recoilless rifle projectiles. Provides procedures for safety, environmental, shock, functioning, and operational tests for ammunition fuzes. Functioning and operation test methods are presented according to the fuze characteristic which initiates functioning (impact, time or proximity).

TOP 4-2-070 871340 01/04/70

FLAMETHROWERS, PORTABLE

Describes test procedures for evaluating the technical performance of portable flame thrower. Includes subtests for receipt inspection, safety evaluation, simulated environmental testing, rough handling and surface transport tests, air transportability, airdrop capability, leak testing, reliability, maintenance evaluation, human factors evaluation, and agent/hardware compatibility.

TOP 4-2-071 870454 01/04/70

FLAMETHROWERS, MECHANIZED

Describes test procedures for evaluating the technical performance of mechanized flame throwers. Includes subtests for receipt inspection, safety evaluation, simulated environmental testing, rough handling and surface transport tests, airdrop capability, leak testing, reliability, maintenance evaluation, human factors evaluation, and agent/hardware compatibility.

TOP 4-2-080 A126011 17/03/83

GRENADES

Describes a method of evaluating the performance of hand-thrown and rifle-launched grenades. Discusses initial inspection and safety precautions. Includes tests for safety evaluation; performance, shock, vibration, and environmental; tests for accuracy and dispersion, arming distance, throwing range (hand grenades), ballistic characteristics, functioning, reliability, recoil and velocity measurements, armor penetration, muzzle flash, mud, frozen rain, frost and snow, bullet-impact, sympathetic detonation, and graze impact sensitivity.

TOP 4-2-090 719671 18/08/69

MINE DETECTORS

Describes procedures for evaluating the performance of mine detectors. Applies specifically to man-pack units employing mutual inductance-type mine detectors. May be modified to include vehicular-mounted units or devices employing radar, audio, and magneto absorption principles. Included are subtests for sensitivity, mutual interface, balance point drift, target acquisition, and environmental tests. Excludes large-scale minefield detection systems such as airborne detection systems employing infrared imaging techniques.

TOP 4-2-130 A145442 24/08/84

FLARES AND PHOTOFLASH ITEMS

Describes engineering tests of aircraft flares, surface flares, and photoflash cartridges. The procedures are also suitable for military potential tests, initial production tests, etc. Test phases include safety tests, environmental and handling tests, and performance tests. These test procedures do not apply to photoflash bombs or illuminating projectiles fired from artillery weapons or mortars.

TOP 4-2-131 718783 01/07/70

PYROTECHNIC SIGNALS

Describes procedures for evaluating both hand-held and air launched pyrotechnic signals. Includes subtests for safety evaluation, environmental and shock tests, reliability, vulnerability and separate performance tests for hand-held, rifle launched and aircraft launched pyrotechnics. Procedures are also suitable for military potential tests and initial production tests. Excludes photoflash units and pyrotechnics launched by artillery or mortar.

TOP 4-2-132 729845 01/08/71

TACTICAL LUMINANTS

Describes a method for evaluating illuminating pyrotechnic performance characteristics. Discusses test course limitations due to instrumentation and residual smoke. Provides procedures for test preparation, calibration of instrumentation, and safety. Identifies the functions performed before, during, and after sunset. Prescribes data collection for burn time, optimum functioning height, drift characteristics, multiple-round performance, sequential performance, effective area illuminated, and flare intensity. Limited to light detection between the threshold of .05 and .2 foot-candle power.

TOP 4-2-500 A107311 09/11/81

AMMUNITION CHARACTERISTICS

Describes procedures for collecting physical characteristics of ammunition and its components.

TOP 4-2-502 A055107 05/05/78

SAFETY EVALUATION OF MINES AND DEMOLITIONS

Describes a method of evaluating the safety of mines and demolitions during development testing. Covers inspections and tests for adequacy of safety features; confirmation of functioning loads; sensitivity to accidental detonation during emplacement, arming, disarming, and recovery; safety during transportation including secured cargo vibration, rough handling, and 12.2 meter drop; and effects of high- and low-temperature storage on functioning. Not applicable to chemical mines.

TOP 4-2-503 876190 01/07/70

SAFETY EVALUATION - CLOSE SUPPORT ROCKETS AND MISSILES

Describes general guidelines for the safety evaluation of close-support rockets and missiles. Includes environmental testing consisting of high- and low-temperature storage and operating tests, transportation-vibration tests, rough handling tests, 40-foot drop tests, and electromagnetic radiation initiation hazard tests. Also includes firing tests consisting of performance after environmental exposure, fuze safety tests, and fragmentation hazards. Intentionally provides only general guidance for preparing a specific test plan due to the wide variety of guided missiles and rockets.

TOP 4-2-504 A070340 01/04/79

SAFETY TESTING OF ARTILLERY, MORTAR AND RECOILESS RIFLE AMMUNITION

Describes safety evaluation test procedures applicable to all ammunition for field and air defense artillery, tank guns, recoilless rifles, and mortars. Although primarily oriented toward explosive-loaded projectiles, procedures for nonexplosive projectiles are included. Covers launch, flight, and environmental hazards as well as compatibility of the ammunition with the weapon system. Test phases include propellant checkout, metal parts checkout, storage test, transportation and rough handling tests, and supplemental tests. Excludes nuclear weapon projectiles.

TOP 4-2-505 A127777 29/04/83

MINES AND DEMOLITIONS

Describes tests for evaluating the performance characteristics of mines and demolitions. Describes safety evaluation, supplementary environmental and shock tests, and tests for weathering, fuze functioning, mine/fuze compatibility, effectiveness, bullet impact, blast sensitivity, sympathetic detonation, and parachute delivery. Discusses reliability, human factors and maintenance evaluations. Describes equipment and technique for determining burst height of bounding mines. Tabulates mine types and applications and physical characteristics of explosives. Not applicable to chemical mines.

TOP 4-2-509 AD216309 31/07/89

AIRDROP QUALIFICATIONS OF EXPLOSIVE MATERIEL

Describes a method for evaluating explosive-loaded materiel during standard airdrop operations. Provides procedures for rigging, airdrop, and post-drop evaluation. Not applicable to chemical, biological, and radiological munitions.

TOP 4-2-604 718744 12/08/86

RANGE FIRINGS OF SMALL ARMS AMMUNITION

Describes the various types of exterior ballistic tests required for small arms ammunition. Tests include accuracy dispersion tests, drift firings, maximum range firings, ballistic coefficient tests, spin decay tests, and stability factor tests. Limited to ammunition for small arms and automatic weapons (30 mm and smaller).

TOP 4-2-605 A110645 03/02/82

BALLISTIC MATCHING OF MAJOR CALIBER AND SPOTTER SYSTEMS

Describes procedures for determining how closely the trajectory of a spotter system ballistically matches that of a larger direct-fire weapon.

TOP 4-2-606 A192185 03/02/88

ESTABLISHMENT OF MASTER- AND REFERENCE- CALIBRATION ROUNDS

Describes techniques for conducting firings to establish master, reference, and interim calibration rounds for artillery, tank, mortar, and recoilless rifle ammunition at Army proving grounds. Also discussed are firings for the establishment of a control lot and for assessing the effects of substitute components on a master, reference, or interim round.

TOP 4-2-607 875700 22/07/70

CHECK FIRING OF MASTER AND REFERENCE PROPELLANTS

Describes test methods for check firing artillery ammunition propellants to determine if their continued use as calibration lots is satisfactory. Provides procedures to be followed before, during, and after firings. Limited to artillery, tank, mortar, and recoilless rifle ammunition.

TOP 4-2-701 718700 23/03/66

IGNITION SYSTEMS FOR ARTILLERY AMMUNITION

Describes necessary methods and techniques to be followed before, during, and after test firing ignition systems and comparable standard ignition systems for tank, field artillery, recoilless rifle, and mortar ammunition. Subtests include firings at normal, high, and low temperatures. An appendix presents background information on artillery ammunition ignition systems.

TOP 4-2-703 718713 10/08/66

PROPELLANT-ACTUATED DEVICES

Describes detailed test methods for evaluating propellant-actuated devices. Subtests include structural tests, torque tests, locked-shut tests, no-load tests, cookoff tests, extreme temperature tests, drop tests, vibration tests, sand and dust tests, salt spray tests, and high altitude tests. An appendix discusses types and characteristics of propellant-actuated devices.

TOP 4-2-705 A091673 21/10/80

CARTRIDGE CASES

Describes procedures for evaluating metal, consumable, and combustible cartridge cases. Identifies supporting tests, facilities, and equipment required. Subtests include weapon and ammunition preparation, initial inspection, ammunition characteristics, safety evaluation, environmental tests, and residue assessment. Also describes techniques used to determine ignition probability and vulnerability to fragments of consumable and combustible cartridge cases.

TOP 4-2-803 718699 10/08/66

ROTATING BAND SEATING MEASUREMENTS

Describes procedures relating to the nondestructive and destructive methods of measuring rotating band seating. Band seating measurement is primarily made on projectiles of caliber 75mm and over, although may be made on smaller projectiles if necessary. Destructive testing methods are generally restricted to inert-loaded or empty projectiles. Appendices discuss the effects of rotating band seating and selection of nondestructive machines, indentures, settings, pressures and accuracy.

TOP 4-2-806 A043537 26/04/77

ARMING DISTANCE AND IMPACT SENSITIVITY OF FUZES

Describes a method of determining the arming distance and impact sensitivity characteristics of fuzes for artillery, mortar, and recoilless rifle ammunition. Describes Langlie and other statistical test techniques. Includes tests for sensitivity to various impact media, rain, and graze impact. Applies to point detonating (PD), point initiating base detonating (PIBD), base detonating (BD), mechanical time super quick (MTSQ), electronic time super quick (ETSQ), and proximity (VT or CVT) fuzes. Not applicable to small arms fuzes.

TOP 4-2-807 A108586 08/12/81

FUNCTIONING TIME OF IMPACT FUZES

Describes procedures for measuring the functioning time of impact fuzes for artillery, mortar, recoilless rifle, and tank ammunition with a high-speed framing camera and smear (shutterless) camera. Does not cover weapon-firing conditions, such as elevation, zone, temperature, and sample size.

TOP 4-2-808 A101109 01/06/81

FUNCTIONING TIME OF AIR BURST FUZES

Describes procedures for measuring time elapsed between the instant of firing (time zero) and the air burst of the warhead.

TOP 4-2-816 719673 28/12/66

PHOTOGRAPHIC INSTRUMENTATION FOR TRAJECTORY DATA

Describes the steps necessary for preparing and conducting trajectory studies using photographic instrumentation for obtaining data on space position, velocity, acceleration, yaw, pitch, roll, and launch performance. Appendices discuss photographic instrumentation characteristics, instrumentation planning, field location considerations, timing systems, visibility, and contrast and refraction errors. Limited to trajectory data specifically associated with the use of photographic instrumentation.

TOP 4-2-823 718686 02/11/66

PAPER BLAST METERS

Describes a method for evaluating the procedures used in determining the extent of shock wave or blast effects. Describes procedures for the use of paper blast meters, construction of paper blast meters, and storage. Discusses test preparation, location of the weapon and blast meters, area for detonating an explosive charge (nonprojectile), and direct measurement of pressure caused by muzzle blast. Describes data reduction and presentation including evaluations of individual charges, average charges, comparison of charges. Applies to explosions when an approximate measurement of pressure is desired.

TOP 4-2-824 718676 25/01/67

PENETRATION TESTS OF HEAT WARHEADS FOR CLOSE SUPPORT ROCKETS AND MISSILES

Describes a method for evaluating procedures used in determining the extent to which HEAT warheads penetrate armor. Describes procedures for test preparation, test item inspection, determining physical characteristics, and design information. Discusses internal examination of the warhead, facilities and safety of test personnel, and dynamic tests. Describes data reduction and presentation. Applies to HEAT warheads that do not spin in flight.

TOP 4-2-825 A057390 08/06/78

FLASH RADIOGRAPHY IN BALLISTIC TESTING

Describes procedures for use of high-speed flash radiographic equipment to obtain shadow graphs or radiographs of projectile performance in-bore, at the muzzle, in flight, or upon impact with target. Describes equipment, test setup, safety precautions, advantages and limitations.

TOP 4-2-827 872144 27/05/70

TIME OF FLIGHT AND BALLISTIC COEFFICIENT

Describes a method for evaluating techniques used in determining time of flight and calculating form factors and ballistic coefficients. Describes test preparation including sample size, selection of instrumentation, linear measurements, and introduction of errors. Discusses weapon characteristics and data, projectile pretests, distance between weapon muzzle to projectile-detecting devices, propellant and tube data, and weather and barometric information. Describes data reduction and presentation. Applies to projectiles having essentially flat trajectories.

TOP 4-2-830 A104838 02/07/81

EXPLOSIVE CRATERING PERFORMANCE TESTS

Describes procedures for conducting field tests to measure and evaluate the cratering performance of chemical explosives and munitions. Provides methods for predicting explosive performance and for determining optimum charge weights and placements. Methods are based upon crater volumes for trinitrotoluene (TNT), and include conversion procedures for ammonium nitrate (AN) and blasting agent (BA) explosives.

TOP 4-3-524 A126035 08/03/83

COLD REGIONS TEST OF INDIRECT FIRE WEAPONS AMMUNITION

Describes procedures to be followed during cold regions environment test of conventional cannon-fired artillery and mortar ammunition and components. Specifies required facilities, type and accuracy of instrumentation, test controls, and test preparation. Includes transportability, storage, and firing tests for functional performance, and general tests for reliability, safety, human factors, and value engineering. Does not include testing of the weapon used to fire the ammunition.

TOP 4-4-001 875604 13/07/70

DESERT ENVIRONMENTAL TEST OF AMMUNITION AND EXPLOSIVES

Describes a system for evaluating ammunition and explosives functioning capability. Describes procedures for test preparation, initial inspection, physical characteristics, control functioning test, exposure functioning, security from detection, maintenance, and safety. Discusses sampling plans and considerations, inspection requirements influence of terrain on desert environmental testing, exposure criteria, mileage criteria for tactical transportation, and functioning test for artillery ammunition. Applies to artillery and small arms ammunition, ammunition components, demolition material, mines, pyrotechnics, and ignition systems.

TOP 4-4-004 866466 24/11/69

ARCTIC ENVIRONMENTAL TEST OF SMALL ARMS AMMUNITION

Describes a method for evaluating small arms ammunition performance characteristics. Provides procedures for initial inspection, physical characteristics, firing, velocity, suitability of tracer or spotter element, position disclosing effect, functional and operational suitability, aerial delivery, human factors, safety, and maintenance. Applies to small arms ammunition under arctic winter environmental conditions only.

TOP 4-4-005 867362 26/11/69

ARCTIC ENVIRONMENTAL TEST OF GRENADES AND GRENADE-TYPE AMMUNITION

Describes test methods and techniques for evaluating the performance and characteristics of grenades and grenade-type ammunition. Describes procedures for test preparation, initial inspection, physical characteristics, firing, fragmentation, position disclosing effect, functional and operational suitability, aerial delivery, human factors, safety, and maintenance evaluation tests. Provides a method for data reduction and presentation. Not applicable to grenade launchers.

TOP 4-4-006 AD718688 19/05/69

ARCTIC ENVIRONMENTAL TEST OF RECOILLESS AMMUNITION

Describes a method for evaluating recoilless ammunition physical and performance characteristics under arctic winter environmental conditions. Describes procedures for test preparation, preoperational inspection, firing. velocity position disclosing effects, functional and operational suitability, aerial delivery, human factors, and maintenance. Discusses scheduling, preparation of personnel, instructional materials, selection of test equipment, record forms, and storage of test ammunition. Describes data reduction and presentation. Applies to recoilless ammunition under arctic winter environmental conditions.

TOP 4-4-009 876259 31/07/70

ARCTIC ENVIRONMENTAL TEST OF TANK AMMUNITION

Describes a method for evaluating tank ammunition performance characteristics. Provides procedures for test preparation, initial inspection, physical characteristics, compatibility, fuze functioning, observation and sensing, dispersion, ammunition functioning, human factors, safety, maintenance evaluation, and reliability.

TOP 5-1-014 719670 31/07/69

STATISTICAL METHODS OF RELIABILITY DETERMINATION

Describes background information associated with reliability determinations, primarily for a missile system test. Topics include reliability requirements and test objectives, collection and format of data for reliability analyses, data reduction and presentation, reliability, and safety. Also provides formulas for finding lower confidence limits on a product of reliabilities and the reliability formula for life test data that follow a Weibull distribution. Includes glossary defining various terms associated with reliability testing.

TOP 5-1-025 719672 10/06/68

DYNAMIC STRUCTURAL DATA ANALYSIS

Describes methods and procedures dealing with the reduction, presentation and analysis of environmental data which apply to structural evaluations and fall under the categories of vibration, shock, acoustics, and strain. Basically, this document deals only with the essential background material and methods used in the analysis of a prerecorded signal.

TOP 5-1-026 718666 06/12/67

RANGE INSTRUMENTATION LAYOUT

Describes background discussion of various types of range instrumentation necessary for missile and rocket testing. Includes description of available facilities at WSMR. Discusses telescopes, ballistic camera, cinetheodolites, radar, angle measuring equipment (AME), telemetry, velocimeters, doppler velocimeters, sky screen equipment, etc.

TOP 5-1-029 718664 03/01/68

ROCKET SLED TESTING

Describes background information about rocket sleds. Discussion covers sled performance and instrumentation, as well as data analysis and evaluation. Includes a glossary containing various terms connected with rocket sled testing.

TOP 5-1-030 A063483 01/10/78

ANALYTICAL MODELING AND COMPUTER SIMULATION OF SYSTEMS

Describes simulation development methodology as a succession of five closely related and often iterative stages. The stages are: (1) system analysis and requirements definition, (2) implementation, (3) verification, (4) validation, and (5) applications. The objectives for each of the development stages are detailed, and the analytical and investigative procedures for accomplishing those objectives are specified. Requirements for project documentation for each stage of simulation development are also presented.

TOP 5-1-031 718565 31/03/69

CINETHEODOLITES

Describes background description of cinetheodolites, such as the Askania cinetheodolite and Controvia cinetheodolite, and their capabilities. Discusses deployment of cinetheodolites and related support equipment during testing, as well as data acquisition and reduction. Also describes problems associated with cinetheodolites and error minimization procedures.

TOP 5-1-032 768009 03/04/73

TROPIC ENVIRONMENTAL TEST OF MISSILE AND ROCKET SYSTEMS

Describes background information relative to test and evaluation of missile and rocket systems. Identifies supporting tests, facilities and equipment required. Discusses conduct of test, test data, and analysis procedures. Applicable to storage and field test in wet-warm and wet-hot climatic categories. Excludes simulated environments.

TOP 5-1-033 30/09/97

STRESS LEVEL TESTING OF MISSILE AND ROCKET SYSTEMS DURING DEVELOPMENTAL TESTS (ENVIRONMENTAL STRESS SCREENING)

Describes guidance procedures for the planning and conduct of Environmental Stress Screening (ESS) tests. ESS is a process where hardware is exposed to one or more environments in a serial fashion to accelerate the discovery of design, workmanship, or part flaws inherent in electrical, optical, or mechanical equipment. Emphasis is placed on temperature cycling and random vibration test environments to include instructions for the conduct of thermal and vibration surveys.

TOP 5-2-090 872619 26/06/70

STARTER, EXTERNAL, GASOLINE AND ELECTRIC

Describes preparation for and methods of evaluating the technical performance and safety characteristics of external starters. Includes subtests for performance testing, kit evaluation, electromagnetic compatibility and magnetic permeability tests, environmental tests, durability tests, transportability tests, maintenance evaluation, safety evaluation, human factors evaluation, value analysis, and quality assurance.

TOP 5-2-500 718571 19/01/67

TEST OF SOLID PROPELLANT SYSTEMS

Describes procedures to evaluate the performance of solid propellant motors after being subjected to various environmental treatments and to ascertain tactical hazards and methods of self-destruct. Includes subtests for motor inspection, static firing operations, igniter tests, and tactical hazard and destruct tests which include the following: open flame fire nozzle impingement, sympathetic detonation, gunfire, slow heat, self-destruct, high-level drop, and thrust neutralizer tests. Appendices discuss special facilities and equipment, motor mounting, motor inspection methods, instrumentation and igniter types.

TOP 5-2-501 718696 13/01/67

TEST OF LIQUID PROPELLANT SYSTEMS

Describes procedures to determine limitations and other characteristics which may affect liquid propellant systems operation. Subtests include static firing tests, nonfiring flow tests, hazard and destruct tests, and propulsion system components tests. Appendices describe liquid propellant systems and special facilities and equipment.

TOP 5-2-504 718232 08/01/68

STRUCTURAL TEST FOR NONOSCILLATING STEADY STATE AND TRANSIENT LOADS

Describes technique for conducting realistic structural load environmental testing in conjunction with other applicable test operations procedures. Procedures include preparation for testing and the structural load test. Provides a glossary of terms and appendices describing load testing facilities, equipment, instrumentation, and other test considerations. Theoretical coverage and mathematical development are limited to those required to understand the practical aspects of structural load testing. Procedures are limited to loads which are nonoscillatory but not necessarily static.

TOP 5-2-506 725538 01/12/66

SHOCK TEST PROCEDURES (MISSILE)

Describes procedures to evaluate the reaction of a missile structure to the effects of mechanical shocks. Describes test preparation, test conduct, and data reduction and presentation. Appendices discuss test specifications, shock machine facilities, instrumentation, shock environment simulation, and equivalent testing concepts. Also provides a glossary of terms. Limited to testing using single impact drop test machines.

TOP 5-2-507 718718 10/04/67

VIBRATION TEST (MISSILE)

Describes personnel in the techniques of missile vibration testing. Describes test preparation, test conduct, and data presentation. Provides a glossary of terms. Appendices discuss vibration test specification, vibration exciters, instrumentation, testing concepts, physical arrangement of exciter and test specimen, theoretical considerations, mechanical impedance matching, equalization problems in random testing, and failure detection problems.

TOP 5-2-508 718734 22/03/67

ACOUSTIC TEST PROCEDURES (MISSILE)

Describes procedures to determine the effects of simulated or actual flight acoustics (high-level noises) upon the missile skin, structure, and components. Subtests include reproduction testing, simulated testing, fatigue testing, and actual operational testing. Appendices discuss acoustic environment, acoustic test facilities and equipment, sound characteristics, comparative information, advantages and disadvantages of acoustical laboratory testing, and types of failures.

TOP 5-2-509 718560 24/07/67

AERODYNAMIC HEATING (MISSILE)

Describes heating methods of subjecting a test specimen to heating effects that simulate those aerodynamic heating effects that the test specimen would encounter if flown in a given trajectory. Includes methods for mathematically determining probable heating effects on a test specimen flying a given trajectory using standard air tables, known trajectory, shape of the test specimen, and known heat transfer constants. Appendices discuss aerodynamic heating test profiles. Procedures are general to discuss a wide variety of missile configurations. Mathematical considerations limit this test to simulated temperature and altitudes where conventional gas dynamic solutions are valid.

TOP 5-2-510 718552 15/12/67

NOISE TESTS OF GUIDANCE COMPONENTS (MISSILE)

Describes a basic discussion of the methods used to determine noise effects on guidance components. Included among test considerations are electronic noise, radio frequency and radar control systems noise, infrared and optical systems noise, and inertial guidance systems noise. Appendices discuss cause of noise in guidance systems and the effects of noise in guidance and control signal channels. Limited in scope to those noises which are the most common and frequently found in electronic, radio frequency and radar control, and infrared and optical systems.

TOP 5-2-511 718668 06/12/67

FIRE CONTROL OPERATIONS (MISSILE)

Describes procedures to evaluate the live firing of a surface-to-air missile against a given target. Included are target acquisition, target tracking, and target interception tests. Tests are limited in scope to those items or components directly used during a fire mission, and their ability to function as an integrated system.

TOP 5-2-512 870598 20/03/70

INVESTIGATION OF MISSILE SYSTEM AERODYNAMICS

Describes general guidance for obtaining data on missile aerodynamics during actual flight conditions. Presents uses of missile flight simulation, prescribes setup of ground instrumentation and data handling facilities, outlines preflight missiles inspection procedures, prescribes installation of missile borne instrumentation, and enumerates, meteorological support needs. Gives guidelines for reducing data to obtain force and moment coefficients, aerodynamic heating effects, aeroelastic effects, and establishment of flight safety boundaries. Limited to rockets and rockets and missiles with a range of up to 200 miles ground track.

TOP 5-2-513 718717 17/06/68

MISSILE BORNE ACCELEROMETER TESTS

Describes procedures common to linear accelerometers and tests applicable to spring-mass type accelerometers with cd potentiometer pickoff, gyro-type integrating accelerometers, and piezoelectric-type accelerometers. Tests include visual factors, nul offset En and null uncertainty, sensitive axis alignment, linearity, scale factor constancy, cross coupling, pickoff scale factor and spring constant, quadrature voltage, case leaks, tests under specified environment, and dielectric tests. Subtests for spring-mass-type accelerometers include potentiometer resolution, sensitivity resolution, resolution, static friction, plus and minus Ig static calibration, swept length and width of potentiometer wiper, linearity and repeatability.

TOP 5-2-515 718656 06/02/68

MISSILE BORNE PRESSURE ALTIMETERS

Describes guides for evaluating missile borne pressure altimeters that are designed to sense the value of atmospheric pressure at a preset flight level, and interpret the sensed value in terms of distance above or below the preset flight level. Describes the following tests: resistance, output impedance, and insulation; dielectric; null and quadrature voltage; polarity, phase shift, and reversal; wave form; leakage; transient response; frequency response; and life cycle. Appendices discuss missile borne pressure altimeters and typical transient and frequency response configurations. Limited to those altimeters that are designed to sense the distance above or below a present altitude.

TOP 5-2-516 718733 15/02/68

PRESSURE TRANSMITTERS (MISSILE)

Describes general procedures for evaluating pressure transmitters commonly found in missile systems. Describes the following tests: visual examination, case leak, overall sensitivity and pickoff resolution, calibration-linearity, hysteresis, friction, repeatability, variation in contact resistance, width of potentiometer, range end points, zero drift, transient response, overall resolution, frequency response, accelerated life testing, and resistance, insulation, and dielectric tests. Appendices describe pressure transmitters and an example of a typical contact resistance measuring circuit. Limited in scope to those pressure transmitters commonly found in missile systems.

TOP 5-2-520 718716 18/10/67

RANGING SYSTEM TEST

Describes methods for evaluating two typical ranging systems under both static and dynamic conditions. Subtests for a geometric ranging system include target position - beam axis determination (static and dynamic), positioning accuracy (static and dynamic), coordinate transformation error, propagation error determination, maximum and minimum range determination (electrical and geometric), and range tracking noise. Specific subtests for a propagation time measurement ranging system include range accuracy determination (static and dynamic), maximum and minimum range, maximum tracking range, range tracking noise, and range resolution capability. Appendices discuss geometric ranging systems.

TOP 5-2-524 718556 03/01/68

MISSILE BORNE GUIDANCE AND CONTROL (MBGC) SUBSYSTEM TESTS

Describes procedures to determine the applicability of a missile borne guidance and control system to a given use, both from an operational and performance point of view. Operational subtests include an organizational checkout equipment subtest and an MBGC assembly operation subtest. Static performance subtests determine accuracy, sensitivity, dead band, drift, cross coupling, repeatability, stability, and response. Dynamic performance subtests determine the MBGC subsystem capabilities under dynamic loading and noise conditions. Procedures are limited to laboratory tests.

TOP 5-2-526 871341 30/03/70

MISSILE BORNE OPTICAL RECEIVERS AND TRANSMITTERS

Describes procedures for evaluating the performance of missile borne optical receivers and transmitters. Receiver tests determine spectral response, frequency response, rise and fall time, optical power limits, and field of view. Transmitter tests determine wavelengths, mode, structure, peak and average power, steady-state power, stability, modulation, losses, spectrum, power distribution, and field of broadcast. Limited to devices using visible or near-visible radiation.

TOP 5-2-527 763324 05/06/73

RECEIVER (INFRARED SEEKERS) (MISSILE)

Describes a method for evaluation of heat seeking missiles. Discusses preliminary activities, equipment, and facilities required. Provides procedures for gyro spin-up time, gyro spin-up current, gyro spin-down time, maximum look angle, recovery time, maximum slew rate, gyro drift, signal-to-noise ratio, cool-down time, field-of-view, caging accuracy, static gain, spectral responsivity, intercept ability, gyro spin versus target intensity, low temperature storage and operation, high-temperature storage and operation, transportation vibration, handling shock, and boost shock. Discusses gyro spin-up time, maximum look angle, signal-to-noise ratio, and low-temperature storage. Limited to infrared seekers.

TOP 5-2-528 718233 08/12/67

GROUND GUIDANCE SYSTEM TESTS (MISSILE)

Describes general description of tests required to evaluate the performance of ground guidance systems. Specific tests include maximum and minimum ranges of acquisition radar test, maximum tracking range tests, transfer to track time test, transfer to track accuracy test, quality of position information supplied by tracker test, maximum angle and range tracking rates test, and human engineering test. Appendix provides detailed discussion of ground guidance systems.

TOP 5-2-531 718567 28/12/67

GROUND GUIDANCE COMPUTERS (MISSILE)

Describes procedures to determine the applicability of ground guidance computers to the intended usage. Subtests for analog computers include individual circuit tests, static tests, dynamic tests, and dynamic evaluation. Also provides subtests for digital computers including input unit static and dynamic tests, memory unit tests, arithmetic and programming unit test, etc. In addition, provides for an analysis of the degree of automation built into the guidance computer. Appendix provides additional information on testing ground guidance computers.

TOP 5-2-532 718236 11/03/68

COMPUTERS (ELECTRONIC) (MISSILE)

Describes procedures to determine the applicability of missile borne electronic computers to the intended usage. Specific tests include composite tests, limiter tests, timer tests, integrator tests, differentiator tests, control amplifier tests, comparator tests, and mixer tests. Limited to missile borne analog computers.

TOP 5-2-538 728593 14/03/68

SERVOMECHANISM

Describes procedures to evaluate the performance of servomechanisms. Time domain tests and frequency domain tests are conducted. Excludes testing under environmental extremes.

TOP 5-2-539 718554 12/07/68

MISSILE BORNE ELECTRICAL POWER SUPPLY TEST

Describes procedures for evaluating the performance of missile borne electrical power supplies. Subtests include power supply warmup, power supply accuracy and stability, output voltage regulation, efficiency, harmonic distortion, ripple content, relay functions, frequency stability test, frequency analysis, phase unbalance, phase angle, and battery life.

TOP 5-2-540 718555 09/05/67

MISSILE BORNE GAS-OPERATED POWER SUPPLY TESTS (PNEUMATIC AND HOT GAS)

Describes procedures to ascertain characteristics of gas-operated missile borne power supplies. Describes the following tests: starting time, pressure regulation, power capability, fuel consumption and onboard run time, operating life and wear resistance, operating positions, resonant spectrum, leakage, relief valve, hydrostatic, and overspeed.

TOP 5-2-541 B057440 20/05/81

MISSILE AND PROJECTILE RECEIVER (LASER ENERGY)

Describes the tests required to evaluated a two-degrees-of-freedom gyro that is directed to a laser-illuminated target.

TOP 5-2-542 718553 04/01/68

MISSILE BORNE HYDRAULIC POWER SUPPLIES

Describes procedures to ascertain power supply characteristics such as fuel consumption, power capability, regulation, and reliability. Includes the following tests: start time, pressure regulation, steady-state and dynamic power capabilities, fuel consumption and run time, operating positions, resonant spectrum, valve seal and operating limits, hydrostatic, nominal heat rise, operation life and wear resistance, and overspeed and burst speed. Excludes hydraulic power supplies which use the main propulsion system power takeoff as the prime mover.

TOP 5-2-582 718589 20/03/67

TEMPERATURE - ALTITUDE TESTS

Describes procedures to determine the ability of a missile system and its components to operate and withstand degradation during and after exposure to various temperature - altitude environments. Tests are conducted using an environmental simulation facility. Pressures are varied from those encountered at sea level to those at 80,000 feet. Temperatures range from -62 °C to +260 °C. Excludes items containing explosives or flammable material, items not readily transportable, and items of sizes capable of affecting the ability of the environmental facility to maintain desired conditions.

TOP 5-2-585 A047970 20/09/85

CHEMICAL TESTS: PROPELLANTS, GASES AND METALS

Describes a method for the evaluation of missile system materials and identifies chemical analyses, facilities, and equipment for use, as appropriate. It provides procedures for propellant, gas, and metal tests. Applicable to missile system material properties determinable by chemical tests.

TOP 5-2-586 718238 29/02/68

CENTRIFUGE TEST PROCEDURES

Describes procedures for conducting a centrifuge test program; provides necessary particulars to be performed when a test specimen is exposed to steady state accelerations. Appendices discuss centrifuges, centrifuge instrumentation and calibration; as well as test considerations and planning.

TOP 5-2-587 718239 19/08/67

PHOTOSTRESS METHOD OF STRUCTURAL DATA ACQUISITION

Describes methods for performing photostress data acquisition including the selection, application, and calibration of the plastic coating; the acquisition of photostress data using a reflective polariscope; the determination of principal stresses by the construction of stress trajectories; and the determination of the difference in magnitude of principal stresses. Does not describe analysis of stress in any specific structure. Appendices discuss polarization of light, optical law of photostress, and necessary test equipment.

TOP 5-2-599 718244 31/01/68

CREEP TEST PROCEDURES

Describes various tests which can be performed to obtain creep data for metallic and plastic materials. Appendices discuss creep behavior of materials and testing considerations for creep tests.

TOP 5-3-001 B127429 16/09/88

BULLET IMPACT ON MISSILES AND ROCKETS

Describes test procedures that simulate the tactical scenario in order to determine the vulnerability and limits of missiles and rockets to threat weapons (Live Fire).

TOP 5-3-534 B108252 30/09/86

MISSILE SYSTEM OPERATIONAL SIGNATURE EVALUATION

Describes procedures to determine the vulnerability of a surface-based tactical missile system to detection and identification. Specific tests determine vulnerability to aerial, ground, and electromagnetic standard surveillance. Limited to mobile, tactical missile systems and currently standard surveillance systems.

TOP 5-4-001 718659 22/10/68

DESERT ENVIRONMENTAL TESTING OF MISSILE AND ROCKET SYSTEMS

Describes desert environmental testing of missiles, rocket, and ancillary systems and equipment. Subtests include exposure, performance, maintenance, security from detection, and safety. Excludes missiles such as ICBM's and anti-ICBM's; warheads for missiles and rockets; components which serve nonweapon functions such as vehicles, electronic fire control systems, and explosive ordnance items; and missile and rocket subsystems used for aircraft armament.

TOP 5-4-006 A149387 26/10/84

COLD REGIONS LOGISTIC SUPPORTABILITY TESTING OF MISSILES AND ROCKET SYSTEMS

Describes test methods and techniques necessary to perform a logistic supportability test of missiles and rocket systems in a cold regions environment.

TOP 6-1-002 A159395 30/08/85

STRESS LEVEL TESTING OF ELECTRONICS, AVIONICS, COMMUNICATIONS AND C3I EQUIPMENTS

Describes tests for measuring and evaluating the technical performance of a System Under Test (SUT) when the SUT is operated to and beyond specifications in order to determine its response to high levels of stimuli.

TOP 6-2-013 A131746 01/09/83

ABSOLUTE ALTIMETERS

Describes a method for evaluating absolute altimeter physical and performance characteristics. Describes procedures for test preparation, warm up time requirements, primary voltage sensitivity, mutual interference, low altitude voltage sensitivity, low altitude accuracy and resolution, fail safe features, pitch and roll, accuracy and range, terrain tracking, operation over water, effects of adverse weather, function over ice caps and snow, and reliability during continuous operations.

TOP 6-2-015 718577 01/08/67

AMPLIFIERS, GENERAL

Describes a method for evaluating general amplifier physical and performance characteristics. Describes procedures for test preparation, determinations of noise figure, input and output impedance, selectivity and phase difference, gain-bandwidth, linearity, feedback factor, and warmup time. Discusses procedures for impedance matching requirements, instrumentation calibration and accuracy, test conditions, and control settings. Describes data reduction and presentation. Applies to amplifiers having three adjustable parameters: gain, tuned frequency, and bandwidth.

TOP 6-2-030 720209 16/12/68

BEACON DEVICES, ELECTRONIC

Describes a method for evaluating electronic beacon technical and engineering characteristics. Describes procedures for electromagnetic field pattern, transmission range, power requirement and supply, electromagnetic vulnerability and compatibility, spectrum signature, frequency accuracy and stability, triggering system, crystal units, and bench test. Discusses test preparation, visual inspections, data reduction, and presentation. Applies to navigation and non-IFF uses.

TOP 6-2-034 A206827 10/04/89

CHRONOGRAPH, FIELD ARTILLERY

Describes a method for evaluating a Doppler system-type radar chronograph. Describes test preparation, procedures for laboratory electronics tests, field operations tests, trial firing, accuracy tests, exposure of the test item to adverse conditions, transportability, reliability, maintenance, safety, and human factors. Discusses receipt inspection, facilities, laboratory electron tests, and radar chronograph-associated equipment.

TOP 6-2-035 719679 28/03/69

COMBAT SURVEILLANCE SYSTEMS

Describes a method for evaluating combat surveillance system physical and performance characteristics relative to suitability for service use. Describes procedures for test preparation, maximum and minimum acquisition and resolution, scan rates, target saturation level, lock-on time after detection, maximum and minimum elevation angles, line of resolution, flight test of image data acquisition subsystems, and laboratory test of image processor subsystem. Discusses data reduction and presentation. Applies to systems which produce permanent record imagery.

TOP 6-2-040 A267139 15/06/93

NON-LETHAL UNMANNED AERIAL VEHICLES (UAVS)

Describes testing methods for determining the technical characteristics of Non-Lethal Unmanned Aerial Vehicles (UAVs). It provides a general description of facilities, instrumentation, and tasks required. It also specifies the documentation required including safety, environmental and frequency authorization documentation. It details methodology for measuring Center of Gravity, developing flight profiles, performing flight tests, and performing transportability tests. This TOP discusses in general Electromagnetic Environmental, Manpower Integration/Reliability, Availability, Maintainability (MANPRINT/RAM), and Aural/Visual/Acoustic testing.

TOP 6-2-050 A134615 10/08/83

SIGNAL CONVERTERS

Describes methods for measuring and evaluating the technical performance and characteristics of signal converters. Describes procedures for test preparation, signaling characteristics (incoming and outgoing calls). Discusses data reduction and presentation. Excludes the testing of items for conversion of information type signals such as multiplexers, data modems, vocoders, facsimile converters, telegraph signal converters or integral signaling components which employ out-of-hand signaling.

TOP 6-2-052 718638 31/12/68

COUNTERMEASURES EQUIPMENT, NONCOMMUNICATION SYSTEMS

Describes a method for evaluating countermeasures equipment technical performance and characteristics. Describes procedures for test preparation, parameter, and field tests. Discusses selection of test equipment, item physical data, operator training, review of instructional material, chronology data, safety, physical and electrical defect inspections, verification of power source, preparation of a sample plan providing final data, and preparation of aircraft with proper instrumentation. Describes electromagnetic characteristics, intercept and direction finding, jamming, and ECM system tests. Discusses data reduction and presentation. Applies to general category of countermeasures equipment.

TOP 6-2-055 B089120L 19/11/84

COMMUNICATION SECURITY EQUIPMENT

Describes test methods and techniques for evaluating the technical performance and characteristics of communication security (COMSEC) equipment. This COMSEC equipment embraces modems, vocoders, signal converters applique equipment, etc.

TOP 6-2-060 B085434 10/08/84

TACTICAL AUTOMATIC DATA PROCESSING EQUIPMENT - MISSION CRITICAL COMPUTER RESOURCES (MCCR)

Describes test methods and techniques for evaluating the technical performance and characteristics of tactical data processing equipment related to specifications and design requirements and the suitability of the equipment for use in its intended tactical environment.

TOP 6-2-063 720969 25/09/69

COMPUTER, DIGITAL, FIELD ARTILLERY, AND PROGRAM FOR ARTILLERY APPLICATIONS

Describes a method for evaluating field artillery digital computer physical and technical performance characteristics relative to suitability for service use. Describes procedures for test preparation, component, and system tests. Discusses selection of test equipment, item physical data, preparation of test personnel, review of instructional material, safety, chronology data, physical and electrical defects inspections, and verification of power source. Describes timing circuit and real time tests, system tests for checkouts, manual operation, programmed logic and controls, sample problem program. Excludes testing of data acquisition equipment and of firing units which interface with unit.

TOP 6-2-065 A134711 01/09/83

DATA TRANSMISSION EQUIPMENT

Describes methods necessary to determine the technical performance of special equipment required to condition digital data signals for transfer over communication systems facilities. Discusses selection of test equipment, item physical data, preparation of test personnel, review of instructional material, chronology data, safety, item physical and electrical defects inspections, verification of power source, and preparation of sample plan for final data. Describes component (laboratory and field) tests, terminal impedance, operating parameters, timing, transmitter output characteristics, and noise tolerance.

TOP 6-2-070 A149958 15/10/84

DIRECTION FINDER SET, RADIO

Describes general guidance for determining and evaluating the technical performance and technical characteristics of direction finder sets, radio. A direction finder set consists of three basic elements: a directional antenna, radio receiver, and an indicator. The directional antenna provides a means for locating the wave front since the antenna output varies with the orientation of the antenna relative to the wave front. The radio receiver selects and amplifies the desired signal, and the indicator tells the operator when the plane of the antenna is parallel to the wave front.

TOP 6-2-075 A152585 15/03/85

DISTANCE MEASURING EQUIPMENT (DME), GENERAL

Describes a series of engineering tests designed to determine the technical performance of distance measuring systems and equipment. The only type of DME system treated in this TOP is the VHF omnidirectional range/tactical air navigation/DME.

TOP 6-2-080 B094868 11/07/85

FACSIMILE SETS

Describes a method for evaluating facsimile set physical and technical performance characteristics relative to suitability for service use. Describes procedures for test preparation, selection of photographs, maps and diagrams, scanning/recording motion, modulation/demodulation methods recording process and medium, equipment configuration, and special facility requirements. Discusses frequency standards, item sample index of cooperation, scan/record speed and synchronization, phasing functions, terminal impedance, transmitter output power, receiver sensitivity, picture signal characteristics, supervisory functions, electromagnetic data reduction and presentation.

TOP 6-2-089 718609 28/08/68

FLASH UNIT, ELECTRONIC

Describes a method for evaluating electronic flash and unit physical and technical performance characteristics. Describes procedures for test preparation, flash duration and flash repetition rate, synchronous operation, illumination intensity and uniformity, electrical power requirements, and electromagnetic interference characteristics. Discusses required records, inspections, standard equipment, and safety. Describes data reduction and presentation. Not applicable to the aerodynamic characteristics of externally-mounted flash units and the airworthiness of aircraft with the unit installed.

TOP 6-2-090 A155777 15/04/85

ANALYZER, FLIGHT LINE

Describes general guidance for determining and evaluating the technical performance and technical characteristics of Flight Line Analyzers. The cumulative test results together with the results of the appropriate Common Engineering Tests will allow an estimate of the test items' capabilities and the suitability of the equipment to meet the required military needs.

TOP 6-2-095 718605 19/11/68

FUZE JAMMER, COUNTERMEASURES EQUIPMENT

Describes a method for evaluating fuze jammer countermeasures equipment physical and technical performance characteristics. Describes procedures for test preparation, parameter, and field tests. Discusses prescheduling and pretesting conditions, optimum jammer parameters and effective area, and volley fire effectiveness. Describes airborne test items, area of normal VT fuze action, area protection, effectiveness versus fuze type, effectiveness against salvo fire, and maximum effectiveness. Discusses data reduction and presentation. Excludes consideration of test item features, functions, or characteristics requiring application of security measures.

TOP 6-2-105 866651 15/12/69

GROUND STATION, GEODETIC, RADIO RANGING

Describes a method for evaluating ground station portion of geodetic survey systems physical and technical performance characteristics. Describes procedures for test preparation, component, and system tests. Discusses preparation of test personnel, review of instructional material, chronology data, safety, physical and electrical defects inspection, verification of power source, and test item sample for final data. Describes employment of block diagrams, supporting pictorial or graphical material, engineering logbook, and instrumentation description. Discusses data reduction and presentation.

TOP 6-2-110 718643 18/08/69

HANDSET, TELEPHONE

Describes a method for evaluating telephone handset physical and technical characteristics relative to suitability for use. Describes procedures for preparation and visual, mechanical, and performance tests. Discusses equipment, physical data, preparation of personnel, safety, chronology data, test item sample for final data, and review of instructional material. Describes procedures for earphone frequency response, distortion, impedance, overload and magnetic stability, transformer insertion loss and frequency response, switch operation life and characteristics, microphone frequency response, signal-to-noise ratio, calibration and measurement procedures, and signaling devices.

TOP 6-2-115 720558 18/08/69

HEADSET (EARPHONE)

Describes a method for evaluating earphone headset physical and technical performance characteristics relative to suitability for service use. Describes procedures for test preparation and visual, mechanical, and performance tests. Discusses test equipment, safety, chronology data, test item sample plan for final data, and review of instructional material. Describes earphone frequency response, earphone distortion, impedance, overload, and magnetic stability; dielectric strength and insulation resistance, transformer insertion loss, and frequency response; and switch operation, life, and characteristics. Excludes microphone component of headset-chestset and headset-microphone assemblies.

TOP 6-2-120 A130285 20/05/83

ALTITUDE AND HEADING REFERENCE SYSTEMS

Describes test methods to evaluate the technical performance of heading reference systems that meet criteria specified in applicable required documents. New universal heading reference systems are continually being developed and improved to meet new and existing requirements, with an all weather capability, for military and commercial aircraft. The heading reference system provides an accurate determination of aircraft heading relative to true north. This is accomplished by use of a magnetic compass and/or gyro compass, depending on the region of operation. Engineers and other personnel engaged in testing and evaluating aircraft systems have developed certain procedures of testing over long period of time.

TOP 6-2-135 A106711 13/10/81

INFRARED EQUIPMENT, GENERAL

Describes test procedures and methods for use in evaluating the performance of infrared equipment. Includes checklist and data collection sheets.

TOP 6-2-140 867067 16/01/70

INTEGRATED AIRCRAFT INSTRUMENTATION

Describes a method for evaluating integrated aircraft instrumentation physical and technical performance characteristics relative to suitability for service use. Describes procedures for test preparation, and tests for components, laboratory, and flight performance. Discusses selection of test equipment, item physical data, preparation of test personnel, review of instructional material, chronology data, safety, physical and electrical defect inspection, test item sample for final data, instrumentation of support aircraft, and coordination of the meteorological support activity. Describes data reduction and presentation. Excludes automatic flight control systems (autopilot) and stability-augmentation systems.

TOP 6-2-145 720582 11/08/69

INTERCOMMUNICATION SETS

Describes a method for evaluating intercommunication set physical and technical performance characteristics relative to suitability for service use. Describes procedures for test preparation, electro-acoustic characteristics, intelligibility, and miscellaneous tests. Discusses selection of test equipment, preparation of test personnel, review of instructional material, chronology data, safety, test item physical and electrical defect inspection, verification of power source, and test item sample plan for final data. Describes transmitting and receiving tests, ancillary transducers, signaling cross-talk, vibration, and electromagnetic interference tests.

TOP 6-2-160 A149800 01/11/84

LANDING CONTROL CENTRALS

Describes test methods and techniques for evaluating landing control centrals and their suitability for use in the intended tactical environment. Procedures are included for measuring the antenna patterns of the multiple antenna installation, the communication ranges, and the radar and identification, friend or foe (radar) acquisition ranges.

TOP 6-2-165 B074917 16/03/83

LABORATORY MEASUREMENTS OF LASER DEVICES

Describes instrumentation and techniques for measuring the characteristics and performance of military laser devices such as designator and range finders. The test procedures are designed for medium-powered, pulsed lasers with expanded, collimated output beams. Procedures are presented for measuring output power, pulse energy, beam divergence, bore sight error, pulse height, pulse width and pulse code accuracy.

TOP 6-2-166 720579 07/10/69

LASER RANGEFINDERS

Describes a method for evaluating laser rangefinder physical performance and safety characteristics. Describes procedures for preparation, operational checkout and performance, power requirements, electromagnetic compatibility, environmental tests, transportability, reliability, maintenance, human factors, and safety. Discusses training, inspections, physical and electrical characteristics, operational performance, transmitter operation, output pulse power, receiver operation signal detectability, detector and range counter pulse response, range counter accuracy, field tests, maximum range capability, optical collimation accuracy, target discrimination, and arming and sighting capability.

TOP 6-2-175 718599 22/09/69

LIE DETECTORS, RECORDING

Describes a method for evaluating recording lie detector physical and technical performance characteristics relative to suitability for service use. Describes procedures for test preparation, preoperational inspections, and determination of performance effectiveness. Discusses selection of test equipment, item physical data, preparation of personnel, chronology data, test item sample plan for final data, and review of instructional material. Describes pneunograph air-leakage rate and dynamic range tests, adequacy of centering control and sensitivity tests, galvanometer resistance range, and sensitivity and self-center function response time tests. Discusses data reduction and presentation.

TOP 6-2-182 718598 01/03/67

METEOROLOGICAL EQUIPMENT, BALLOONS

Describes a method for evaluating balloon physical and technical performance characteristics designed for meteorological flights. Describes procedures for test preparation, burst and aging effects tests, and reliability. Discusses selection of an environmental test chamber and test equipment, preparation of test personnel, review of instructional material, chronology data, retest inspections, and preconditioning. Describes data reduction and presentation. Applies to ceiling, pilot, and sounding balloons used for meteorological purposes.

TOP 6-2-183 718628 19/03/68

METEOROLOGICAL EQUIPMENT, CLOUD HEIGHT SET (BEAM TYPE)

Describes a method for evaluating cloud height measurement system physical and technical performance characteristics. Describes procedures for test preparation, electrical power requirements, electrical power supply, technical characteristics of illuminator, detector sensor, scanner movement, angular height, display components, amplifier, and integrated system. Discusses lamp cooling, laser and radar systems, and radio frequency compatibility. Discusses data reduction and presentation. Applies to items which employ illumination technique for measurement for cloud base height.

TOP 6-2-184 720580 21/06/68

METEOROLOGICAL EQUIPMENT, INFLATION, TETHERING, AND LAUNCHING EQUIPMENT

Describes a method for evaluating inflating, tethering, and launching equipment physical and technical performance characteristics. Describes procedures for hydrogen generator tests, inflation and launch devices, volume weight-off test, and engineering evaluation of publications. Discusses visual inspections, gas generator, volume meter, preparation of test personnel, records, forms, and safety. Describes data reduction and presentation. Applies to catalytic gas generators producing pure hydrogen.

TOP 6-2-185 A141706 15/05/84

METEOROLOGICAL SOUNDING SYSTEMS

Describes general test and specific subtest procedures required to measure the technical performance of meteorological sounding systems. Comparison of test results with criteria and technical specifications permits evaluation of their suitability for an intended use. The test procedures contained herein apply only to meteorological sounding systems which determine atmospheric pressure, temperature, humidity and upper atmospheric wind speed and direction. Testing of rocket carrier vehicles is not included.

TOP 6-2-186 718646 06/06/68

METEOROLOGICAL EQUIPMENT, STATIONS, MANUAL OR AUTOMATIC

Describes a method for evaluating safety aspects and technical performance characteristics of meteorological equipment and stations. Describes procedures for test preparation, temperature sensor, hygrometers, wind measurement sensor, cloud height set, rain and snow measurement sensor, visibility and air pressure sensor, aspirator system, indicator-recorder tests, transducers, transmitters, and decoders.

TOP 6-2-189 870954 20/03/70

METEOROLOGICAL EQUIPMENT, WIND MEASURING, SURFACE

Describes a method for evaluating surface wind measuring equipment physical and technical performance. Describes procedures for test preparation, wind speed, and direction components. Discusses scheduling, selection of test equipment, preparation of test personnel, review of instructional material, chronology data, safety, physical and electrical defect inspection, verification of power source, and test item sample for final data. Describes speed test accuracy and response, direction test accuracy, response and stability, component interchangeability, and electromagnetic interference tests. Discusses data reduction and presentation. Applies to portable and transportable wind measuring equipment and sets for field Army operations.

TOP 6-2-200 720557 30/04/68

TDM-PCM MULTIPLEXERS

Describes a method for evaluating multiplexing equipment physical and technical performance characteristics. Describes procedures for test preparation, determining frequency response, input-output, linearity, gain stability, distortion, noise, and crosstalk. Discusses voice, teletype and data transmission, and noise and crosstalk versus loading. Describes order wire operation, integral test facilities, and electromagnetic interference. Discusses data reduction and presentation. Not applicable to radio sets integral to communication assemblage incorporating PCM multiplexers and individual special cable assemblies and components.

TOP 6-2-205 B121343L 28/03/88

HYPERBOLIC NAVIGATION EQUIPMENT, AUTOMATIC

Describes a method for evaluating automatic navigation equipment physical and performance characteristics relative to suitability for service use. Describes procedures for test preparation, component, special component, and special tests. Describes special components tests including receiver-indicator, readout versus phase or time-difference of input signals, readout stability versus amplitude of input, dynamic response to signal amplitude step input, and slave receiver/transmitter synchronization tests. Also includes system tests.

TOP 6-2-206 A163408 01/08/85

NAVIGATION EQUIPMENT, DOPPLER

Describes a method for evaluating Doppler navigation equipment physical and technical performance. Describes procedures for test preparation, determining radio frequency (RF) interference, RF power output, frequency stability, hover, and accuracy. Discusses item physical data, test personnel familiarity with test item, review of instructional material, and item physical and electrical defect inspection. Describes data reduction and presentation. Excludes Doppler optical navigation systems.

TOP 6-2-210 759926 01/10/72

POWER SUPPLY, ELECTRICAL

Describes a method for evaluating electrical power supply operational and performance characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for safety, input and output regulation, ripple, output transient voltage, overload protection, power changeover, meter accuracy, efficiency, visual-mechanical inspection, environmental tests, human factors, and electromagnetic interference. Applicable to conversion type electrical supplies, rotary and static converters. Not applicable to power supply converters that convert energy in any form other than electrical to electrical energy.

TOP 6-2-220 720581 18/04/69

RADAR, FIELD ARTILLERY

Describes a method for evaluating field artillery radar physical and technical performance characteristics relative to suitability for service use. Describes procedures for test preparation, transmitter, receiver, antenna, moving target indicator, and system tests. Discusses selection of test equipment, review of instructional material, chronology data, item physical and electrical defect inspection, and test item sample plan for final data. Describes receiver noise figure, antenna measurements, moving target indicator threshold velocity detection capability, radar performance resolution, azimuth resolution, radar system accuracy, and mutual interference. Describes data reduction and presentation.

TOP 6-2-222 A145407 07/09/84

RADAR, TARGET AND RANGING

Describes conventional test methods employing conventional test instrumentation for testing conventional radars. Single tests and subtests designed to test radar components, transmitters, receivers, antennas, etc., and system performance are conducted with single item instruments such as meters, generators, attenuators, counters, oscillators, plotters, etc., and with adequate land areas for conducting field tests.

TOP 6-2-223 718602 28/01/69

WEATHER RADAR

Describes a method for evaluating weather radar physical and technical performance characteristics. Describes procedures for test preparation, sensitivity time control, audio alarm, Isecho contouring, display persistence, functional tests, spatial coverage, radar system accuracy, and radar resolution. Discusses pretest conditions and preparations. Describes data reduction and presentation. Not applicable to procedures for extracting climatological data for radarscope film records.

TOP 6-2-230 718619 07/04/69

RADIO CONTROL EQUIPMENT

Describes a method for evaluating radio control equipment physical and technical performance characteristics. Describes procedures for test preparation, static test signaling, loop signaling, wire-to-wire and radio-to-wire signaling, voice frequency control, and transmission; dynamic test compatibility with interface equipment; and control through wire circuit. Discusses data reduction and presentation.

TOP 6-2-235 A124828 22/02/83

RATE OF CLIMB INDICATORS

Describes test methods for evaluating the technical performance of rate-of-climb indicator systems relative to the appropriate Qualitative materiel Requirements (QMR), Small Development Requirements (SDR), Technical Characteristics (TC), and Required Operational Capability (ROC) documents. Applies to instantaneous rate-of-climb indicators only.

TOP 6-2-245 A100417 31/12/80

AUDIO RECORDING AND REPRODUCING EQUIPMENT, TAPE

Describes test procedures and methods for use in evaluating the performance of audio tape recording and reproducing equipment. Includes checklist and data collection sheets.

TOP 6-2-250 720972 18/08/69

RELAYS, RADIO

Describes a method for evaluating radio relay system physical and technical performance characteristics relative to suitability for service use. Describes procedures for test preparation, component tests including electromagnetic characteristics and primary power tests, and system tests including system quality and compatibility tests.

TOP 6-2-262 718622 16/04/69

SUPPRESSORS, VOLTAGE TRANSIENT

Describes a system for evaluating transient voltage suppressors. Discusses selection of test equipment, calibration, initial inspection, and identifying data. Provides procedures for radio transmitter output power, suppression of voltage transients, intelligibility degradation, adequacy of self-protection features, and electromagnetic compatibility. Describes applicable common engineering tests.

TOP 6-2-265 720578 01/03/67

SWITCHBOARDS, MANUAL

Describes a method for evaluating two-wire telephone switchboards. Discusses test preparation requirements for initial inspection, instrumentation, equipment, and functional check. Describes procedures for terminal impedance, amplitude versus frequency distortion, harmonic distortion, envelope delay distortion, longitudinal balance, crosstalk, noise, signaling and supervision, operator's telephone circuit, auxiliary circuits, compatibility with associated equipment, and instructional manual. Prescribes a system for data collection, reduction, and presentation. Not applicable to automatic electronic switching systems.

TOP 6-2-280 718647 01/12/67

TELETYPEWRITER EQUIPMENT

Describes a system for evaluating teletypewriters. Discusses preoperational requirements for functional check, instrumentation, and equipment. Provides procedures for orientation range, receiving circuit distortion tolerance, transmitting circuit distortion, sensitivity, signal speeds and composition, electromagnetic interference characteristics, internal signal line power supply characteristics, and miscellaneous electrical and mechanical features. Applies to teletypewriters using US International Number 2 Alphabet (American Variation).

TOP 6-2-285 A180335 01/05/87

AUTOMATIC ELECTRONIC TEST EQUIPMENT

Describes a method for evaluating electronic test sets. Discusses test preparation requirements for initial inspection, safety precautions, facilities and equipment. Defines test terminology. Provides procedures for meter characteristics, generating function, retrieving function, and combined function tests. Describes applicable common engineering tests. Discusses a system for data reduction and presentation.

TOP 6-2-288 718629 05/06/69

TERMINALS, RADIO

Describes a system for evaluating radio communication link terminals. Discusses radio terminal set basic characteristics, general configuration, and preparation for tests. Provides procedures for component, system, and electromagnetic environmental tests. Prescribes applicable common engineering tests. Applies to tactical direct link radio communication systems. Excludes communication security equipment.

TOP 6-2-290 720210 29/01/69

TERMINALS, TELEGRAPH AND TELEPHONE

Describes a method for evaluating telegraph and telephone equipment. Discusses frequency division multiplexing (FDM), time division multiplexing (TDM), and frequency shift keying (FSK) modulation. Provides procedures for test preparation, performance characteristics, transmission, traffic, order wire channel compatibility, adequacy, reliability, and electromagnetic interference. Prescribes a system for data reduction and presentation. Excludes radios, switchboards, teletypewriters, special cable assemblies, special components, and standard signaling and two-wire/four-wire converter equipment.

TOP 6-2-295 718631 01/05/67

TERRAIN AVOIDANCE EQUIPMENT

Describes a system for evaluating terrain avoidance equipment. Discusses pretest requirements for initial inspection, safety, instrumentation, equipment, and preflight preparations. Provides procedures for fail-safe, obstacle detection/resolution, automatic and manual profile following, automatic and manual vertical terrain clearance, lateral terrain clearance, automatic and manual dual mode, ground mapping, over water, over ice caps, and over snow. Describes a method for data reduction and presentation. Not applicable to pitch, roll, and yaw equipment. Excludes environmental testing.

TOP 6-2-300 718630 01/05/68

TOWERS AND MASTS

Describes a method for evaluating towers and masts. Describes procedures for test preparation, light mechanisms, locking components, guy cables, tension devices, anchorage, platforms, braces, struts, ladders, and instructional manuals. Prescribes a system for data reduction and presentation.

TOP 6-2-315 A100416 03/06/81

TROPO-SCATTER COMMUNICATIONS SYSTEMS

Describes test procedures and methods for use in evaluating the performance of tropo-scatter communications systems. Includes checklist and data collection sheets.

TOP 6-2-326 721599 14/08/68

WIRE AND CABLE

Describes a method for evaluating tactical wire and cable. Describes test preparation, conditions, and environment. Discusses procedures for field wire, multipair cable/cable assemblies, and carrier cable/cable assemblies. Provides a system for data reduction and presentation of conductor and insulation resistance, capacitance unbalance, attenuation, characteristic impedance, crosstalk, and electromagnetic interference.

TOP 6-2-327 718633 21/10/69

CABLE AND WIRE DISPENSERS

Describes a system for evaluating cable and wire dispensers. Discusses pretest requirements for initial inspection, nomenclature, serial numbers, manufacturer, physical characteristics, instrumentation, and equipment. Provides procedures for laboratory and field payout, jettisoning, and air-lay characteristics. Prescribes a method for data reduction and presentation. Excludes laying techniques, loading and reloading dispensers, and the effect of weather and terrain on wire payout.

TOP 6-2-329 720211 21/08/68

REELING MACHINES

Describes a method for evaluating reeling machines. Describes procedures for test preparation, reel type, size, speed, braking, clutch characteristics, torque, level wind, tension control, radio frequency interference, wire rewinding, and servicing capability. Adaptable to gasoline motor-driven, electric motor-driven, and hand-operated reeling machines.

TOP 6-2-330 869899 20/03/70

DIRECTION FINDING EQUIPMENT, GYROSCOPES

Describes a method for evaluating gyro-stabilized direction finding equipment with procedures for test preparation, voltage breakdown, leak, drift, balance, procession rate, leveling pickoff signal gradient, leveling rate, and scale error. Applies to the gyro unit. Excludes the amplifier.

TOP 6-2-331 868939 26/02/70

FLASH RANGING EQUIPMENT

Describes a method for evaluating flash ranging equipment. Discusses procedures for test preparation, observation (spotting), instrumentation, orientation, angle measurement, target position location, communication equipment, and plotting boards. Applies to manually-operated equipment.

TOP 6-2-332 720974 25/09/69

NUCLEAR YIELD MEASURING DEVICES

Describes a system for evaluating nuclear yield measuring devices. Discusses pretest requirements for initial inspection, device identifying data, instrumentation, equipment, and safety precautions. Provides procedures for response, electromagnetic interference, nuclear weapons effects, microbiological, battery load, shelf life, reliability, and airdrop tests. Prescribes applicable common engineering tests.

TOP 6-2-333 869898 20/03/70

SEISMIC DETECTION AND RANGING

Describes a method for evaluating seismic detection and ranging devices. Discusses pretest requirements for initial inspection, component identifying data, safety precautions, functional check, instrumentation, and equipment. Provides procedures for response characteristics, effect of positioning, and characteristics signatures of vibrational disturbances, such as those caused by walking man, running man, military vehicles, and various explosions (mortar, grenade, etc.) in sand, gravel, mud, clay, and in the forest. Applies to tactical seismic detection and ranging devices.

TOP 6-2-334 866620 15/12/69

SURVEY SYSTEMS, AIRBORNE

Describes a method for evaluating airborne survey systems. Defines geodetic survey and position determining type systems. Describes procedures for test preparation, geodetic survey accuracy, overwater accuracy, repeatability, system-controlled photography, and traverse accuracy. Prescribes applicable common engineering tests. Provides sample calculations of results and data presentation format. Applies to overall system accuracy in electronic surveying (geodetic), controlled photography, and connection surveying (closed traverse).

TOP 6-2-335 A156669 07/05/74

TEST, MEASUREMENT AND DIAGNOSTIC EQUIPMENT (SYSTEM PECULIAR)

Describes guidance for planning tests of system-peculiar test, measurement, and diagnostic equipment (TMDE) including test program sets (TPS) needed to support a system, to ensure its conformance with requirements documents, Acquisition Plan (AP), Test Program Set Management Plan (TPSMP), and Item Integrated Logistics Support Plan (ILSP). Subtests to satisfy the requirements for the particular TMDE and test type (DT II and III) can be selected or supplemented from those listed in the test procedure.

TOP 6-2-503 868926 23/03/70

RELIABILITY

Describes a method for evaluating communication, surveillance, and avionic electronic equipment reliability characteristics. Provides procedures for preparing the item and conducting the test under controlled stress conditions. Prescribes the accumulation of failure, operating time, and temperature data. Discusses mean-time-between-failure, longevity requirements. Appendixes define test terminology and reliability test plans; verification of exponential assumption for failure times; and equipment on-off cycling, duty cycling, and voltage cycling. Excludes determination of sample size, confidence levels, and risks associated with reliability estimation or demonstration.

TOP 6-2-504 A273137 06/05/93

MAINTAINABILITY (COMMUNICATIONS/ELECTRONICS)

Describes a general methodology to monitor, review and verify quantitative and qualitative maintainability characteristics of electronic test items. These test procedures apply to all maintainability/supportability qualification tests and demonstrations which are conducted/witnessed by TECOM Test Centers. These include both government and contractor testing in support of research, development and acquisition programs.

TOP 6-2-507 A103808 15/06/81

SAFETY AND HEALTH EVALUATION - COMMUNICATION/ELECTRONIC EQUIPMENT

Describes general guidance for evaluating potential hazards during development testing of communications-electronics equipment/systems. Presents safety checklists, physical tests, observations, and examinations for use during conduct of the test by all involved test personnel. Safety tests must be designed to comply with test item specifications. Electrical, mechanical, electromagnetic radiation, and other hazards during the safety test must be identified and contained.

TOP 6-2-508 A054097 12/09/77

VULNERABILITY, ELECTROMAGNETIC

Describes methods for determining the electromagnetic vulnerability of communications-electronics (CE) equipment. Describes procedures to determine if CE systems or equipment possesses inherent deficiencies which can be intentionally exploited by enemy electromagnetic means and if the contribution of the systems or equipment to the electromagnetic environment can be used to detect their presence and location.

TOP 6-2-514 A106797 15/10/81

ELECTRICAL POWER REQUIREMENTS

Describes test procedures and methods for use in evaluating the requirements for electrical power. Includes checklist and data collection sheets.

TOP 6-2-516 721891 26/12/67

ADEQUACY OF SHELTER AND VAN-MOUNTED LIGHTING, VENTILATION, AIR- CONDITIONING, AND HEATING EQUIPMENT

Describes a method for evaluating electronic van and shelter lighting, ventilation, air-conditioning, and heating characteristics. Provides procedures for test preparation, general lighting, supplementary lighting, reflectance and brightness, shadow, brightness contrast, natural lighting, blackout, outlet air velocity, air movement, air exhaust, heating and air-conditioning, temperature, humidity, stratification, physical characteristics, noise, and low-temperature (-65 °F) and high-temperature (+120 °F) tests.

TOP 6-2-521 A108138 19/11/81

ENGINEERING INTELLIGIBILITY TESTING OF VOICE COMMUNICATION EQUIPMENT

Describes engineering test methods for evaluating the intelligibility of voice communication equipment. Addresses two types of testing: phonetically balance word list testing and automatic testing by means of the voice intelligibility analysis system.

TOP 6-2-542 A281396 31/05/94

ELECTROMAGNETIC INTERFERENCE TESTS

Describes a general guideline for electromagnetic interference testing of electronic, electrical, and electromechanical equipment, subsystems, and systems. This TOP is applicable to the measurement of emissions and the identification of susceptibilities for all systems and in all test categories.

TOP 6-2-543 09/12/97

IDENTIFICATION FRIEND OR FOE (IFF) SYSTEMS PERFORMANCE

Describes the methods of obtaining the overall IFF system performance when the components are connected in a closed loop configuration (technical performance under engineering, bench test conditions) and under normal operation configuration using an aircraft test bed. In the system test, the data base is accumulated at various ranges, aspects, and weather conditions, and in an actual radiated environment. The data base yields field rejection and enemy acceptance probabilities. Exercises all components of the IFF system.

TOP 6-2-544 A088149 11/07/80

RADIO RECEIVER SENSITIVITY (NON-PULSED)

Describes the engineering test method and techniques for evaluating the sensitivity performance of non-pulsed receivers and other devices. Provides empirical determinations of sensitivity, gain and noise limited, and quieting and squelch sensitivity. The evaluation is related to criteria expressed in ROC and MN requirements. These procedures were developed from NBSIR 73-333 modified for receivers up to 400 MHz.

TOP 6-2-545 A086463 12/05/80

RADIO RECEIVER, SPURIOUS RESPONSE

Describes and measures the spurious responses of AM/FM radio receivers by using commonly available test instrumentation. Generally applies to all receivers, including image, intermediate frequency feedthrough, local oscillator related, and extraneously produced spurious responses. Spurious responses are signals propagated at frequencies outside the tuned principal response frequency to which the receiver responds with measurable output power. The reveal frequencies where the receiver is most susceptible to undesired signals (jamming).

TOP 6-2-551 A092271 29/10/80

RADIAC RATEMETER CALIBRATION ACCURACY

Describes methods of determining the calibration accuracy of ratemeters over the range of 80 REV to 3 MEV (to be conducted within a secure enclosure or building where radiation is reduced to a rate less than 2 milliroentgens per hour). Calibration is scored against U.S. Army secondary standards. The procedure is used for/with tactical ratemeters.

TOP 6-2-552 A082639 28/03/80

GAMMA RAY SOURCE CALIBRATION

Describes techniques to perform periodic calibration of gamma ray sources used as secondary standards. The personnel must be trained and experienced in radiac calibration equipment, so the procedures are not step-by-step but are planned to be interpreted by the operator in each instance.

TOP 6-2-553 B053045 02/09/80

CAMOUFLAGE, ATTENUATION, FIELD (RADAR)

Describes standardized methods for determining the attenuation properties of various types of radar camouflage material using ground surveillance radars (GSR).

TOP 6-2-554 B053046 19/09/80

CAMOUFLAGE, ATTENUATION, LAB, (RADAR)

Describes standardized methods for determining the attenuation properties of radar camouflage using laboratory facilities.

TOP 6-2-558 A055798 20/04/78

R.F. POWER OUTPUT (AM-FM-SSB) NON PULSED

Describes methodology and procedures for determining non-pulsed radio frequency, output power. They are adaptable to any power level, can be used in shielded enclosures or in the field and adapted to arctic, desert, temperate or tropic zones. Delineates instrumentation, data collection, and analysis.

TOP 6-2-559 A056647 10/04/78

ELECTROMAGNETIC RADIATION UNITS

Describes methodology for determining if electromagnetic radiation of sufficient strength to cause performance degradation to the test item exists at the test item location. Uses the results of an electromagnetic radiation effects test to identify the radio frequencies and electromagnetic radiation levels to which the test item is susceptible. Further, using a test bed, comparisons are made with the representative signal levels to determine if the levels at which the test item suffers performance degradation would occur in the field. Develops signal transmission characteristics for each radiation source to provide recommended minimum separation criteria.

TOP 6-2-560 A078944 12/10/79

COMPATIBILITY, ELECTROMAGNETIC

Describes methods for determining the electromagnetic compatibility of communications-electronics (CE) equipment. Describes procedures to determine if CE equipment and systems incorporate the best available technology for securing freedom from interference and if concepts for their use assure mutual compatibility with the resultant electromagnetic environment.

TOP 6-2-561 A086440 29/02/80

DOSIMETER DIRECTIONAL DEPENDENCE, RADIAC

Describes a method for determining the directional dependence characteristics of direct reading dosimeters. The dosimeter is oriented in various positions and angles with reference to a calibrated radiation source, thus providing data for evaluating the directional accuracy.

TOP 6-2-562 A092235 19/11/80

RATEMETER DIRECTIONAL DEPENDENCE, RADIAC

Describes a standard method for performing radiac ratemeter directional dependence tests to determine the ratemeter response to radiation emanating from different directions relative to the test item.

TOP 6-2-563 A090591 29/08/80

RADIAC DOSIMETER LEAKAGE TEST

Describes standard methods for performing leakage test of direct-reading tactical dosimeters of the sealed or pump-down types. The procedure is designed for normal ambient conditions but can be used in other environments with the necessary precautions.

TOP 6-2-570 A104573 01/09/81

STANDARD BIT ERROR RATE (BER) VS RADIO RECEIVED SIGNAL LEVEL TESTING

Describes the statistic of a characteristic theoretical curve of a long-term BER versus received signal level (RSL). The attenuation is initially set to produce a BER of approximately 10-4 at a corresponding RSL. When this point on the curve is statistically valid, long-term BER's can be predicted to correspond with the RSL.

TOP 6-2-576 A111963 19/03/82

RECEIVER SELECTANCE

Describes the voltage response characteristics as a function of frequency around the principal response frequency of the receiver; normally pertains t a linear receiver. For nonlinear receivers such as those with clipping or automatic gain control, selectance may be a function of signal level. Selectance of a receiver is measured in terms of voltage response as a function of the spectrum of frequencies, centered around the principle response frequency, which the receiver will amplify with significant gain. Describes three methods and requires only simple and commonly available test equipment.

TOP 6-2-594 A124797 02/02/83

NOISE FACTOR

Describes a procedure for measuring receiver noise factor. The five methods of measurement which are automatic noise figure meter, Y-factor/power meter, Y-factor attenuator, 3 dB, and accurate and automatic noise figure measurements HP AN/64-3.

TOP 6-2-598 B139846 31/07/89

POSITION LOCATION AND NAVIGATION SYSTEMS (PLANS)

Describes a method for testing Position Location and Navigation Systems (PLANS) to include the Global Positioning System (GPS). The GPS performs navigation and positioning by using radio signals transmitted from space vehicles (SV). This space-based system has the capability for worldwide positioning and navigation which could meet the needs of many users. Being a passive electromagnetic system, it provides many economic and engineering benefits over systems based on LORAN-type hyperbolic systems. This TOP limits the testing to the GPS, Manpack (M), Vehicular (V), Aviation (HELO) sets and their System Support Packages (SSPs).

TOP 6-2-603 A169509 11/07/86

IMAGE INTENSIFIERS, NIGHT VISION AD/PVS-7 GOGGLES

Describes general test and specific subtest procedures required to measure the technical performance of Night Vision Goggles (NVG). The NVG is a self-contained, night vision viewing system worn on your head or hand-held. It provides the operator with improved night vision capabilities using available light from the sky allowing the operator to see and move in the night and perform such manual tasks as map reading, vehicle maintenance, short-range surveillance, etc. The NVG is used only at night. It is not used as a substitute for daytime vision. Test procedures address essential requirements for such items.

TOP 6-2-604 A248964 15/04/92

ANTENNA PATTERN MEASUREMENT FACILITIES

Describes procedures for testing antennas using the automated data acquisition and analysis system (ADDAS) consisting of an outdoor compact range and an arc range. The CR uses a parabolic reflector to collimate radio frequency energy in order to simulate far-field testing. The AR operates in the near field using uncollimated RF. The TOP includes procedures for measuring antenna gain; locations of beams, lobes, and nulls; and other related characteristics. It contrasts the capabilities of the two ranges and provides guidelines to help the user select the right range for a particular test.

TOP 6-3-013 A095680 11/02/81

TESTING AIRCRAFT INSTRUMENT

Describes information and procedures for testing aircraft flight and systems performance instruments in the functional environment of the designated aircraft.

TOP 6-3-025 A092825 13/07/80

FUNCTIONAL TESTING COMMUNICATION EQUIPMENT (AVIONICS)

Describes guidance and procedures for performance testing of airborne communication equipment. Addresses communication range, transmission pattern, homing, retransmission (effects of atmospheric conditions), and durability. Provides general information and guidance in test preparation, test controls, test conduct, and data reduction.

TOP 6-3-026 A107579 13/11/81

FUNCTIONAL TESTING PROXIMITY WARNING DEVICES

Describes procedures and provides guidance for evaluating the functional characteristics of aircraft proximity warning devices. The primary objective of the evaluation is to determine if the test system performs its intended function in accordance with specific specification and requirements documents.

TOP 6-3-037 A720569 30/04/90

AIRBORNE TARGET DETECTION, ACQUISITION, AND TRACKING DEVICES

Describes general guidance for evaluating airborne target detection and acquisition systems including systems using light television cameras, microwave detection, and infrared detection. Specific tests cover inspection, installation, operation and performance, durability, maintainability, reliability, maintenance evaluation, compatibility, safety, personnel and training requirements, and human factors. Describes procedures for evaluating airborne target detection and acquisition systems.

TOP 6-3-052 718578 14/03/69

COUNTERMEASURES EQUIPMENT, NONCOMMUNICATIONS SYSTEMS

Describes procedures for evaluating ECM systems. Applies to airborne and ground-based systems incorporating the primary functions of detection, location, and jamming. Also applies to air and ground-based victim systems classed as radar-type and one-way transmission or reception type. Tests have been designed considering test item and victim system in applicable opposition; different victim systems within the scope of the test item; test item; primary functions of detection, location, and jamming; and systems operated in simulated tactical situations by appropriate military personnel. Specific tests include physical characteristics, durability, operational test qualitative electromagnetic interference, safety, human factors, etc.

TOP 6-3-060 872272 25/03/70

DATA PROCESSING EQUIPMENT

Describes procedures for evaluating data processing equipment used in tactical data processing systems. Specific tests cover operational characteristics, qualitative electromagnetic interference, physical characteristics, durability, transportability, adverse conditions maintenance, safety, human factors, emplacement and displacement, personnel training requirements, and adequacy of instruction manuals. Excludes procedures for determining test item design flexibility and evolutionary capability.

TOP 6-3-061 871131 25/03/70

COMPUTERS, ANALOG

Describes procedures for evaluating tactical electronics analog computers designed for solving specific mathematical problems in artillery and navigation information or control systems. Specific tests include checkout routines, system tests, subsystem tests, qualitative electromagnetic interference, physical characteristics, durability, transportability, adverse conditions, maintenance, safety, human factors, emplacement and displacement, personnel training requirements, and adequacy of instruction equipment. Excludes testing of any equipment which interfaces the computer system.

TOP 6-3-062 868079 11/02/70

COMPUTERS, DIGITAL

Describes procedures for evaluating tactical digital computer systems. Specific tests cover operational characteristics, qualitative electromagnetic interference, physical characteristics, durability, transportability, adverse conditions, maintenance, safety, human factors, emplacement and displacement, personnel training requirements, and adequacy of training manuals.

TOP 6-3-070 718652 24/03/69

DIRECTION FINDER SET, RADIO

Describes procedures for evaluating the performance of radio direction finder sets. Specific tests include installation space requirements; operational characteristics; reliability; adequacy of vehicle, van, or shelter; and maintainability. Excludes testing of larger direction finder systems to provide intercept reception, spectrum analysis, communications reception, and telephone communications.

TOP 6-3-105 868558 11/02/70

GROUND STATION, GEODESIC, RADIO RANGING

Describes procedures for evaluating the radio ranging geodesic ground station portion of geodesic survey systems. Specific test include operation tests, qualitative electromagnetic interference, physical characteristics, durability, transportability, adverse conditions, maintenance, safety, human factors, emplacement and displacement, personnel training requirements, and adequacy of instruction manuals.

TOP 6-3-120 A116984 23/06/82

FLIGHT TESTING AIRCRAFT HEADING REFERENCE SYSTEM

Describes procedures and guidance for testing aircraft heading reference systems. The primary objective of this document is to determine if heading reference systems under test perform their intended function within the aircraft environment, with an accuracy and reliability as determined through the appropriate requirements document.

TOP 6-3-166 A173776 11/09/86

LASER SYSTEMS, AIRBORNE

Describes procedures for evaluating laser systems installed in aircraft. Discusses terrain mapping, rangefinding, communication, and fire control. Tests cover inspection, installation, operational tests, maintenance, compatibility, draft technical manuals, safety, human factors, and personal training requirements.

TOP 6-3-205 A097115 03/03/81

FUNCTIONAL TESTING AIRBORNE NAVIGATION EQUIPMENT

Describes guidance and procedures for performance testing of airborne navigation equipment. Addresses flight planning, range test, rotor modulation, accuracy, and influence of weather. Provides general information and guidance in test preparation, test controls, test conduct, and data reduction.

TOP 6-3-223 A097562 27/03/81

FUNCTIONAL TESTING AIRBORNE RADARS

Describes guidance and procedures for planning and conducting performance tests on airborne radar systems. Addresses the weather, terrain avoidance, and airborne transponders radar systems. Provides the test project officer with general information and guidance in test preparation, test controls, test implementation/conduct, and data reduction.

TOP 6-3-329 718618 07/08/69

REELING MACHINES

Describes a system for evaluating reeling machines. Provides procedures for test preparation, prefield laying, field laying, postfield laying, field recovery, and postfield recovery tests. Applies to surface laying and recovery of field wire and cable in a tactical environment.

TOP 6-3-505 872266 25/03/70

EMPLACEMENT, ACTION, AND MARCH ORDER

Describes guidance for evaluating electronic and communication equipment emplacement, action, and march order capabilities under applicable tactical and environmental conditions. Specific tests cover site selection and preparation, emplacement, preparation for action, and march order.

TOP 6-3-527 A095679 30/11/80

TESTING OF SENSOR MATERIEL

Describes basic procedures for conducting tests of vehicle and personnel intrusion detectors (sensors) and related material in any environment. Applies to testing of all types of tactical, unattended ground sensors which work on the principles of detection of an outside stimulus, logic processing of that stimulus, and transmission of a coded signal to a readout device. Included are sensors which operate on magnetic, seismic, acoustic, electromagnetic, and audio detection principles. Describes methods for determining the operational effectiveness of sensors to include false alarm rate (susceptibility to undesired sources), detection range and probability of detection, probability of correct classification.

TOP 6-4-001 867319 12/11/69

DESERT (FIELD) TESTS OF COMMUNICATION, SURVEILLANCE & AVIONICS

Describes a method for evaluating electronic equipment performance characteristics. Describes procedures for test preparation, initial inspection, exposure, system performance/capability, security from detection, maintenance, human factors, and safety tests. Applies to field tests in a desert environment. Excludes simulated environments.

TOP 6-4-003 720577 04/01/71

COMMUNICATION, SURVEILLANCE AND AVIONIC EQUIPMENT

Describes a method for evaluating communication, surveillance, and avionic electrical equipment under tropical environmental conditions. Discusses project planning, facilities, documentation, calibration, equipment required personnel training, and mission scenario. Provides procedures for initial inspection, operational characteristics, short-term storage, surveillance, maintenance, safety, human factors, security from detection, and value analysis. Applies to field testing. Excludes simulated environments.

TOP 6-4-004 876133 28/07/70

ARCTIC ENVIRONMENTAL TEST OF TACTICAL RADIO COMMUNICATIONS EQUIPMENT

Describes a system for evaluating tactical radio communications equipment. Provides procedures for preoperational inspection, physical characteristics, arctic mounting, vehicle winterization kit adequacy, short-range communications, frequency stability, continuous operations, compatibility, remote operations, mobile and man pack operations, reaction time, accessories, battery power supplies, human factors, safety, maintenance, and reliability. Not applicable to aircraft systems.

TOP 6-4-006 873565 05/06/70

ARCTIC ENVIRONMENTAL TEST OF TACTICAL WIRE COMMUNICATIONS EQUIPMENT

Describes a system for evaluating tactical wire communications equipment physical characteristics. Provides procedures for preoperational inspection, physical characteristics, functional suitability, durability, compatibility, human factors, safety, and maintenance evaluation tests. Applies to field wire, telephones, switchboards, teletypewriters, reels, cables, crypto equipment, and related equipment.

TOP 6-4-007 158887 20/06/85

COLD REGIONS LOGISTIC SUPPORTABILITY TESTING OF ELECTRONIC, AVIONIC AND COMMUNICATIONS EQUIPMENT

Describes methods and techniques necessary to perform a logistic supportability test of electronic, avionic, and communications equipment in a cold regions environment.

TOP 7-1-004 872273 03/06/70

ARMY AIRCRAFT ARMAMENT

Describes background information relative to testing aircraft armament. Discusses facilities, equipment, and test planning. Describes typical weapons, ammunition, fire control systems, and characteristic data sheets. Provides a checklist of special considerations for weapon subsystem - aircraft compatibility evaluation. Discusses safety evaluation and environmental test requirements. Applies to Army helicopter armament subsystems.

TOP 7-1-006 A070758 01/06/79

ARMY AIRCRAFT FIRE CONTROL SYSTEMS PERFORMANCE EVALUATION

Describes an overview of the testing required for evaluating the performance or effectiveness of modern Army aircraft weapon systems. Provides a chart of test inputs to an aircraft armament system effectiveness evaluation. Presents in detail test and analysis procedures for accuracy and dispersion inputs.

TOP 7-2-009 737177 15/01/72

AIRCRAFT ROCKET SUBSYSTEMS

Describes a method for evaluation of air to ground rocket subsystems performance characteristics. Provides procedures for test preparation, physical characteristics, safety evaluation, high temperature (+145 °F), low temperature (-50 °F), sand, dust, humidity, salt spray, fungus, rain, freezing rain, vibration, static loading, firing tests, durability, accuracy, and dispersion.

TOP 7-2-011 731189 01/09/71

AIRCRAFT GUIDED MISSILE SUBSYSTEMS

Describes a method for evaluating aircraft guided-missile system performance characteristics. Provides procedures for test preparation, physical characteristics, safety, firing system operating characteristics, environmental effects, operational vibration, static loading, warhead effectiveness, noise blast, toxic gas, electronic counter countermeasures, radiation hazards, radio frequency interference, ground firing, airborne firing, tracking, maintenance, human factors, reliability, and endurance.

TOP 7-2-013 726910 08/06/71

AIRCRAFT MINE AND MUNITION DISPENSING SUBSYSTEMS

Describes a method for evaluating helicopter mine and munition dispensing subsystems relative to suitability for service use. Describes procedures for test preparation, safety, supplementary shock, vibration, environmental effects, performance, bullet impact and vulnerability, reliability, human factors, and maintenance. Discusses data reduction and presentation to include a safety configuration. Limited to general testing of mine and munition dispensing subsystems.

TOP 7-2-041 871332 25/03/70

DRONE GUIDANCE, CONTROL, TRACKING, AND PLOTTING COMPONENTS

Describes a system for evaluating drone guidance, control, tracking, and plotting components. Provides procedures for components, laboratory performance, flight performance, and compatibility tests. Excludes testing of the drone aircraft or the intended drone payload.

TOP 7-2-055 723036 12/03/71

GROUND SUPPORT SERVICE EQUIPMENT (AVIATION)

Describes a system for evaluating aviation ground support service equipment and associated accessories performance characteristics. Describes procedures for preparation test, ground blower heater performance, portable ground support air-compressor, auxiliary power, tilted position operations, endurance, self-propelled equipment mobility, towed or manually propelled equipment, broadband radio interference, vibration shock, climatic extremes, intermediate climatic, transportability, maintenance, reliability, safety, human factors, value analysis, and quality assurance tests.

TOP 7-2-056 719100 10/04/67

SHELTERS - TENTS (AVIATION)

Describes a method for evaluating aviation maintenance test shelters. Provides procedures for erection, moving, striking, structural stability, blackout, illumination, heating, water resistance, durability, environmental maintainability, reliability, transportability, human factors, and safety evaluation tests. Applies to nose-in wall and air-inflated tests. Excludes testing for special characteristics such as sound level, ventilation, etc.

TOP 7-2-057 726893 01/07/71

TOOLS, AVIATION

Describes a method for evaluating aviation tool performance characteristics. Provides procedures for test preparation, linear measuring tools, torsional moment, bending moment, compression, shear stresses, climatic effects, endurance, transportability, maintenance, reliability, safety, human factors value analysis, and quality assurance. Applies to hand tools.

TOP 7-2-070 721606 22/11/67

MAT SETS, LANDING

Describes a method for evaluating landing mat sets and associated equipment performance characteristics. Procedures include safety, durability, skid resistance, tire wear, topographical data, soil strength, installation, trafficability, wheel load, mat deflection, maintenance, human factors, environmental, and value analysis tests. Appendix describes the California bearing ratio method for soil strength measurement.

TOP 7-2-085 871335 19/05/70

HELMETS (AVIATION)

Describes a system for evaluating aviation helmets and procedures for test preparation, helmet shell performance, visor performance, helmet communications and attenuation, environmental effects, transportability maintenance, safety, human factors, and quality assurance tests.

TOP 7-2-086 725540 17/05/71

OXYGEN AND PROTECTIVE MASKS (AVIATION)

Describes a system for evaluating aviation oxygen and protective masks. Describes procedures for inspection, physical characteristics, masking, unmasking, protection to the wearer, compatibility with aviation equipment, operational suitability, communications suitability, comfort, durability, maintainability, reliability, maintenance, human factors, and safety tests. Applies to aviation demand oxygen masks, protective masks, and combination oxygen and protective masks.

TOP 7-2-087 723030 19/03/71

CLOTHING (AVIATION)

Describes a method for evaluating aviation clothing such as flying coveralls flying suits, and flight clothing accessories (gloves, scarves, socks, etc.) Provides procedures for test preparation, sizing, fitting, donning, doffing, compatibility with associated aviation clothing and personal equipment, water/POL repellency, cleaning, anti exposure, CBR protection, resistance to static electricity, endurance, fungus resistance, maintenance, sunshine, reliability, transportability, safety, human factors, value analysis, and assurance tests.

TOP 7-2-090 725541 10/05/71

RESCUE EQUIPMENT, PERSONNEL, AIRCRAFT CRASH

Describes a method for evaluating aircraft crash rescue equipment performance characteristics. Provides procedures for test preparation, performance characteristics, environmental effects, durability, transportability, maintenance, reliability, safety, human factors, value analysis, and quality assurance. Applies to protective clothing, rescue tools and implements, fire fighting arresting apparatus, and rescue systems.

TOP 7-2-095 171021 26/11/69

SURVIVAL EQUIPMENT (AVIATION)

Describes a system for evaluating aviation survival equipment. Describes procedures for preparation for test, performance characteristics, storage in aircraft, environmental, transportability, maintenance, safety, human factors, and value analysis tests.

TOP 7-2-100 745092 20/04/72

TIE DOWN, CARGO, AIRCRAFT

Describes a method for evaluating aircraft cargo tie down device performance characteristics. Provides procedures for test preparation, initial inspection, performance, durability, reliability, maintenance, safety, and human factors. Applies to conventional tie down devices. Not applicable to aircraft and platform tie down provisions or equipment suitability for tie down.

TOP 7-2-105 868557 26/11/69

TRACTOR, WHEELED, AIRCRAFT, TOWING

Describes a method for evaluating wheeled aircraft towing tractors. Provides procedures for preparation for test, clutch pedal, steering wheel, brakes, electrical system, cooling system, exhaust system, power trains, drawbar pull, acceleration, speed, fuel consumption, turning radius, gradeability, side slope, fording, mobility, durability, broadband radio interference, magnetic permeability property, transportability, maintenance, safety, human factors, and value analysis tests.

TOP 7-2-506 741240 15/02/72

AIRDROP SYSTEMS SAFETY

Describes a method for evaluation of airdrop equipment safety characteristics. Provides procedures for test preparation, initial inspection, preparation of questionnaires, mechanical hazards, electrical hazards, personnel safeguards, and safety measures required on drop zone (land and water). Appendices describe permanently installed airdrop equipment, identify the levels of safety hazards, and provide an example questionnaire. Applicable to airdrop equipment (restraining, extraction, retardation, and ground impact) for rotary and fixed wing aircraft in the delivery of general materiels, excluding toxic or hazardous items.

TOP 7-2-510 744811 20/04/72

AIRDROP SYSTEM COMPONENTS

Describes a method for evaluation of airdrop system component performance characteristics. Provides procedures for test preparation, initial inspection, performance, durability, reliability, maintenance, safety, human factors, and value analysis. Applicable to conventional airdrop system components associated with the extraction, deployment, retardation, and impact phases. Excludes rotating decelerators, radar release activation devices, paragliders, and similar unconventional components.

TOP 7-2-511 A053617 31/01/78

AIRCRAFT MILITARY UTILITY AND FUNCTIONAL TESTS

Describes testing methods and techniques necessary to determine the degree to which Army fixed-wing and rotary-wing aircraft meet the functions and performance requirements stated in the requirements documents. These procedures cover testing relating to the weight and balance, ground handling, aircraft configuration, system configuration, aircraft performance, and operational characteristics and compatibility with related equipment.

TOP 7-2-512 A063879 03/11/78

SIMULATED AIRDROP TEST-WEAPONS AND INDIVIDUAL EQUIPMENT

Describes a method of determining whether weapons and individual equipment (when rigged in common or special purpose containers) jumped by individual parachutists are capable of functioning as intended after landing on the drop zone. The method is limited to items released on a lowering line prior to landing.

TOP 7-2-513 A216853 02/08/89

HUMAN FACTORS ENGINEERING TESTING OF AIRCRAFT COCKPIT LIGHTING SYSTEMS

Describes the procedures, test equipment and facilities to perform tests and evaluations of aircraft cockpit lighting systems. The topics include display luminance, illuminance, contrast, balance, uniformity, sunlight readability, display color, night vision goggle compatibility, crew station reflections and mockup evaluations. These procedures are closely tied to U.S. Army lighting requirements.

TOP 7-3-051 719101 25/01/71

ENVIRONMENTAL CONTROL UNIT (ECU)

Describes a system for evaluating aircraft environmental control units. Provides procedures for initial inspection, installation characteristics, power requirements, operational performance, compatibility, durability, effects of weather, maintenance, reliability, achieved availability, safety, human factors, and personnel training requirements.

TOP 7-3-054 726872 01/07/71

AIRCRAFT REFUELING/DEFUELING SYSTEMS

Describes a method for evaluating aircraft refueling/defueling system operational performance characteristics. Provides procedures for test preparation, initial inspection, operational performance, durability, weather effects, maintenance evaluation, maintainability, reliability, achieved availability, safety, human factors, personnel training, and compatibility with related equipment. Excludes aircraft external refueling/ defueling equipment associated with the operation.

TOP 7-3-085 724080 26/04/71

HELMETS (AVIATION)

Describes a method for evaluating aviation helmets. Describes procedures for arrival inspection, physical characteristics, donning, removing, protection to the wearer, compatibility with the aviation environment, operation suitability, communications suitability, durability, maintenance, human factors, and safety tests.

TOP 7-3-086 719105 25/01/71

OXYGEN AND PROTECTIVE MASKS (AVIATION)

Describes a system for evaluating aviation oxygen and protective masks. Describes procedures for inspection, physical characteristics, masking, unmasking, protection to the wearer, compatibility with aviation equipment, operational suitability, communications suitability, comfort, durability, maintainability, reliability, maintenance, human factors, and safety tests. Applies to aviation demand oxygen masks, protective masks, and combination oxygen and protective masks.

TOP 7-3-087 719106 23/12/70

CLOTHING (AVIATION)

Describes test procedures to determine the degrees and forms of protection, and the relative comfort and functional performance of flight crew member clothing.

TOP 7-3-095 A171021 13/06/86

SURVIVAL EQUIPMENT (AVIATION)

Describes a method for evaluating aviation survival equipment. Describes procedures for inspection, physical characteristics, compatibility with aircraft crew member personal equipment, functional suitability, durability, maintenance, human factors, and safety tests. Applies to signaling equipment survival rations, personnel protective equipment, etc.

TOP 7-3-110 A188739 29/08/87

TRAINER, FLIGHT SIMULATOR

Describes a method for evaluating flight simulation trainers. Considers the performance of the student pilot, instructor, and the system computer. Describes procedures for initial inspection, installation characteristics, operational tests, durability, reliability, maintenance evaluation, safety, human factors, and personnel training requirements. Appendixes discuss simulator test exercises for fixed and rotary wing aircraft.

TOP 7-3-500 A237645 10/05/91

PHYSICAL CHARACTERISTICS (AVIATION MATERIEL)

Describes procedures and methods for determining the physical characteristics of aviation materiel undergoing technical testing. These procedures cover techniques for obtaining physical characteristics data for aircraft (both fixed and rotary wing), avionics, electronics and communications equipment; aircraft subsytems and associated equipment; ground support equipment; and personnel equipment. Other tests required will be performed in accordance with the appropriate common Test Operations Procedures (TOP).

TOP 7-3-503 A047260 31/08/77

ARRIVAL INSPECTIONS/PREOPERATIONAL INSPECTIONS, AVIATION

Describes a method for evaluation of test item completeness, conditions, and operability upon receipt for testing. Identifies the facilities and equipment required. Provides procedures for document arrival, receiving, packaging, maintenance test package, item, inventory, safety, and preoperational and technical inspections. Applicable to aviation materiel.

TOP 7-3-506 A110361 18/01/82

SAFETY (AVIATION MATERIEL)

Describes existing test methodology and techniques necessary to determine the degree to which aviation materiel meets the safety requirements stated in the requirements document. Procedures cover the requirements, aircraft armament, airframe, ejection seat, and electronic, mechanical, and miscellaneous hazards relating to Army aircraft. Includes a guide for laser safety for use when lasers are mounted in Army aircraft.

TOP 7-3-507 A132367 01/09/83

INTEGRATED LOGISTIC SUPPORTABILITY (AVIATION MATERIEL)

Describes a systematic method for conducting an integrated logistic supportability test in the developmental test environment. Sub-elements of the logistic supportability test covered by this TOP are: end item requirement; supply support, technical data/equipment publication; support and test equipment; manpower and personnel, training, and training devices; transportation and handling; and facilities.

TOP 7-3-508 A053400 23/07/77

RELIABILITY (AVIATION MATERIEL)

Describes testing methods and techniques necessary to determine the degree to which Army aviation materiel meets the reliability prescribed in the requirements documents.

TOP 7-3-509 A055595 15/05/78

COMPATIBILITY, RELATED EQUIPMENT (AVIATION MATERIEL)

Describes procedures to conduct a compatibility test of aviation materiel during development testing to assure that the items being tested meet the compatibility requirements of the Army environment and the explicit compatibility parameters stated in the requirements documents. Includes physical, technical, and operational characteristics; and installation/removal, armament, avionics, personnel materiel, and maintenance. Also includes checklists and data collection forms.

TOP 7-3-519 A074883 17/08/79

PHOTOGRAPHIC AND VIDEO IMAGE SUPPORT (AVIATION MATERIEL)

Describes requirements, suggestions and techniques for incorporating photographic coverage into the developmental test of aviation materiel. Uses photographic techniques to obtain precise data in relation to time velocity and rates and characteristics of a developmental test event or simply to document a physical defect, deficiency or shortcoming in a human factors evaluation.

TOP 7-3-521 A074049 31/08/79

CLIMATIC CHAMBER TESTING (AIRCRAFT, ENGINES, ARMAMENT AND AVIONICS)

Describes information, guidance, and methodology for planning and conducting an environmental climatic chamber developmental test of aviation material. Environmental climatic chamber developmental testing, in general, determine the degree to which aviation material meets the developmental requirement of the U.S. Army materiel needs (MN) documents, when subjected to the environmental conditions developed in the climatic chamber.

TOP 7-3-522 A056976 31/05/78

AIRCRAFT DEFOGGING AND DEFROSTING (TRANSPARENT AREA)

Describes procedures for testing and evaluating aircraft defogging and defrosting equipment. The test item may be an integral part of the aircraft environmental control system or a separate system designed to operate independently or in conjunction with the aircraft environmental control system. The procedure is to determine if the test item can prevent or eliminate fogging or frosting of the interior and exterior surfaces of aircraft transparent areas in all aircraft operational modes.

TOP 7-3-523 A223851 13/04/90

AIRCRAFT INFRARED SUPPRESSION DEVICES

Describes a method for evaluating infrared suppression device performance characteristics. Provides procedures for test preparation, initial inspection, installation characteristics, power requirements, operational performance, qualitative electromagnetic interference, durability, weather effects, maintenance, maintainability, reliability, achieved availability, compatibility with related equipment, safety, human factors, and operator training. Not applicable to ground and airborne infrared detection sensors.

TOP 7-3-524 A173508 10/06/86

RADAR REFLECTIVITY

Describes a method for evaluating aircraft radar reflectivity characteristics. Provides procedures for test planning, required support, operator training, surveillance by ground-based radar, surveillance by airborne radar and weather effects. Prescribes data collection relative to aircraft altitude, range, bearing, pattern voids, degree of reflectivity, and detection on radar scope.

TOP 7-3-526 A263138 05/02/93

EXTERNAL ACOUSTICAL NOISE MEASUREMENTS FOR AVIATION SYSTEMS

Describes procedures for measuring external acoustical noise of Army helicopters. It covers test procedures for the measurements of steady-state and impulse noise.

TOP 7-3-527 A068951 18/10/78

INTERNAL/EXTERNAL LIGHTING (AVIATION MATERIEL)

Describes procedures for determining the functional characteristics of an internal/external light or lighting system developed for U.S. Army aircraft.

TOP 7-3-528 A074128 31/08/79

AIRCRAFT ANTI-ICING/DEICING

Describes information, methodology and techniques necessary to plan, conduct and document a development test of an aircraft anti-icing/deicing system. A development test of an aircraft anti-icing/de-icing system will determine the degree to which a subject system and its associated documentation, tools and auxiliary equipment meets the requirements of the Army Materiel Needs (MN's) documents.

TOP 7-3-529 30/09/91

INGRESS, EMERGENCY EGRESS, AND EMERGENCY EVACUATION TESTING OF ARMY AIRCRAFT

Describes procedures for ingress, emergency egress, and emergency evacuation testing of Army aircraft.

TOP 7-3-530 A247831 28/02/92

STEADY-STATE ACOUSTICAL NOISE MEASUREMENTS IN AVIATION SYSTEMS

Describes procedures for measuring acoustical noise levels in Army helicopters. It covers tests for steady-state acoustical noise at crewstations and in the passenger compartment.

TOP 7-3-531 A284433 26/08/94

VIBRATION TESTING OF HELICOPTER EQUIPMENT

Describes guidelines and procedures for helicopter vibration calibration and measurements. Guides are provided for vibration frequencies and magnitudes to be expected. Procedures are developed for transducer selection and placement, instrumentation system design, and data collection. Emphasis is placed on use of piezoelectric accelerometers for vibration measurement, and tape recorders for data storage. Step-by-step procedures are provided for accelerometer sensitivity measurement and calibration, instrumentation system adjustments and calibrations, and data collection and handling.

TOP 7-3-534 A289458 23/12/94

AIRWORTHINESS TESTING OF FIXED WING AIRCRAFT (ASYMMETRIC POWER TESTING)

Describes procedures and methods for evaluating the asymmetric power handling qualities of multi-engine fixed-wing aircraft during developmental testing. This TOP is limited to handling qualities only and does not address aircraft performance.

TOP 7-4-005 720570 29/01/71

AVIATION EQUIPMENT AND AIRCRAFT ARMAMENT

Describes a method for evaluating aviation, air delivery equipment, and aircraft armament. Provides procedures for initial inspection, operating characteristics, individual and organizational clothing and equipment, aircraft flight evaluation, aircraft armament, short-term storage, surveillance, security from detection, maintenance, safety, human factors, and value analysis tests. Provides sample scenario for tropic testing. Excludes simulated environmental testing. Limited to field testing in the humid tropics.

TOP 7-4-006 867368 26/11/69

ARCTIC ENVIRONMENTAL TEST OF ROTARY WING AIRCRAFT

Describes a system for evaluating rotary wing aircraft performance characteristics. Describes procedures for preoperational inspection, physical characteristics, operational suitability, aircraft heating, defrosting, flight and performance characteristics, compatibility with related equipment, human factors, and maintenance evaluation. Appendixes provide human factors checklists.

TOP 7-4-008 876376 23/07/70

ARCTIC ENVIRONMENTAL TEST OF AVIATION SUPPORT EQUIPMENT

Describes test methods and techniques for evaluating the performance and characteristics of Aviation Support Equipment under Arctic winter environmental conditions. Provides procedures for preoperational inspection, physical characteristics, operational suitability, human factors, safety, maintenance, and reliability. Appendixes provide human factors checklists.

TOP 7-4-009 871344 08/05/70

ARCTIC ENVIRONMENTAL TEST OF AIRDROP PLATFORMS

Describes test methods and techniques for evaluating the performance and characteristics of Airdrop Platforms under Arctic Winter environmental conditions. Provides procedures for preoperational inspection, physical characteristics, assembly, rigging, loading, aerial delivery, durability, reusability, human factors, safety, and maintenance evaluation.

TOP 7-4-010 721607 05/12/69

ARCTIC ENVIRONMENTAL TEST OF AIRCRAFT ARMAMENT

Describes a system for evaluating aircraft, armament subsystems. Describes procedures for preoperational inspection, physical characteristics, functional suitability, human factors, safety, and maintenance evaluation.

TOP 7-4-011 719110 05/12/69

ARCTIC ENVIRONMENTAL TEST OF PERSONNEL AND CARGO PARACHUTES

Describes a method for evaluating personnel and cargo parachutes performance characteristics. Provides procedures for preoperational inspection, physical characteristics, packing, rigging, aerial delivery, human factors, and maintenance evaluation.

TOP 7-4-012 A158778 20/05/85

ARCTIC LOGISTIC SUPPORT TESTS OF AVIATION, AIR DELIVERY, AND WEAPONS

Describes methods and techniques necessary to perform a logistic supportability test of aviation, air delivery equipment, and aircraft weapons subsystems in cold regions environment.

TOP 8-1-001 733296 01/11/71

TESTING CHEMICAL, BIOLOGICAL AND RADIOLOGICAL EQUIPMENT

Describes introductory discussion on testing chemical, biological, and radiological (CBR) equipment. Covers categories of CBR equipment and possible problem areas peculiar to CBR equipment testing. Also deals with factors influencing specific test plans such as instrumentation requirements, availability, safety, statistical, and data reduction techniques.

TOP 8-2-011 868257 16/02/70

FILLING APPARATUSES, CHEMICAL LAND MINE

Describes a method for evaluating chemical landmine filling apparatus physical and technical performance characteristics relative to suitability for service use. Describes procedures for test preparation, receipt inspection, safety, simulated environmental testing, rough handling and surface transport, air portability, airdrop capability, leak testing, operational reliability, decontamination, aspects, maintenance characteristics, agent-hardware compatibility, and human factors. Discusses data reduction and presentation including a safety confirmation.

TOP 8-2-013 721609 06/10/69

SHIPPING CONTAINERS, TOXIC CHEMICAL AGENT

Describes a method for evaluating toxic agent shipping container physical and performance characteristics relative to suitability for service use. Describes procedures for test preparation, receipt, inspection, safety, simulated environmental testing, rough handling and surface transport, air portability, airdrop capability, leak testing, agent-container compatibility, radiography, and design evaluation. Discusses data reduction and presentation to include a safety statement.

TOP 8-2-014 865922 15/05/69

DISPENSING PUMPS, HAND DRIVEN, LIQUID CHEMICAL AGENT

Describes a method for evaluating hand-driven dispensing pump physical and performance characteristics. Describes procedures for test preparation, receipt inspection, safety, simulated environmental testing, rough handling and surface transport tests, air portability, airdrop capability, leak testing, operational reliability, decontamination aspects, maintenance aspects, agent-hardware compatibility, and human factors. Discusses data reduction and presentation to include a safety statement.

TOP 8-2-061 719114 30/09/67

DECONTAMINATING APPARATUS, PORTABLE

Describes a method for evaluating portable decontaminating apparatus physical and performance characteristics. Describes procedures for test preparation, receipt inspection, safety, simulated environmental testing, rough handling and surface transport, air portability, airdrop capability, leak testing, operational reliability, assembly/disassembly, maintenance aspects, and human factors. Discusses data reduction and presentation to include a safety statement.

TOP 8-2-062 720978 06/10/69

DECONTAMINATING APPARATUSES, POWER-DRIVEN, VEHICULAR- OR SKID-MOUNTED

Describes a method for evaluating decontaminating machinery physical and performance characteristics. Describes procedures for test preparation, receipt inspection, safety, simulated environmental testing, rough handling and surface transport, air portability, maintenance aspects, operational reliability, agent-hardware compatibility, auxiliary capability, and human factors. Discusses data reduction and presentation to include a safety statement.

TOP 8-2-063 866468 10/12/69

DECONTAMINATION KITS, INDIVIDUAL, FIELD

Describes a method for evaluating small field decontamination kit physical and performance characteristics. Describes procedures for test preparation, receipt inspection, safety, simulated environmental testing, rough handling and surface transport tests, air portability, airdrop capability, operational aspects, and human factors. Discusses data reduction and presentation to include a safety statement.

TOP 8-2-064 A134611 25/07/83

RADIAC CALIBRATORS

Describes general test and specific subtest procedures for measuring and evaluating the technical performance and characteristics of radiac calibrators relative to criteria specified in the required operational capability, letter requirements, and coordinated test program. Considers only those radiac calibrators designed for field use. The variety of devices to which this TOP applies precludes detailed coverage of any particular item. The methods outlined are general to provide test coverage for various radiac calibrators and may be adapted to accommodate specific equipment. The test engineer is responsible to determine how best to extract the required data for the item under test.

TOP 8-2-066 A32800 28/05/97

BIOLOGICAL DETECTOR, AEROSOL

Describes the procedures, facilities, instrumentations, simulants, and agents of biologic origin (ABO) used at U.S. Army Dugway Proving Ground in testing point biological warfare agent detection systems and components. The TOP applies to field and laboratory testing at all stages of detection equipment development. The TOP addresses quality control and data management issues. It includes recommended formats of data presentation.

TOP 8-2-072 868299 03/03/70

SAMPLING AND ANALYZING KITS, CBR AGENT

Describes a method for evaluating CBR agent sampling and analyzing kit physical and performance characteristics. Describes procedures for test preparation, receipt inspection, safety, simulated environmental tests, rough handling and surface transport tests, air portability, airdrop capability, decontamination aspects, operational characteristics, maintenance aspects, field operability, and human factors. Discusses data reduction and presentation to include a safety statement.

TOP 8-2-082 718768 02/10/67

DISPERSERS, RIOT CONTROL AGENT, PORTABLE

Describes a method for evaluating portable riot control agent disperser technical performance and safety aspects. Describes procedures for test preparation, receipt inspection, safety evaluation, simulated environmental tests, rough handling and surface transport, air portability, airdrop capability, decontamination aspects, maintenance, operational reliability, radiography, leak tests, dissemination characteristics agent/hardware compatibility, and human factors. Discusses data reduction and presentation to include a safety statement. Limited to systems which are man-portable and operator controlled.

TOP 8-2-083 718767 31/01/69

DISPERSERS, RIOT CONTROL AGENT, VEHICULAR- OR HELICOPTER-MOUNTED

Describes a method for evaluating vehicular- or helicopter-mounted riot control agent disperser technical performance and safety aspects. Describes procedures for test preparation, receipt inspection, safety, simulated environmental tests, rough handling and surface transport, air portability, airdrop capability tests, decontamination aspects, operational reliability tests, installation and maintenance aspects, leak testing, dissemination characteristics, agent/hardware compatibility tests, and human factors. Discusses data reduction and presentation to include a safety statement. Limited to riot control agent dispersers, vehicular or helicopter-mounted.

TOP 8-2-084 871761 27/04/70

GENERATORS, SMOKE, MECHANICAL

Describes a method for evaluating vehicular- or helicopter-mounted riot control agent disperser technical performance and safety aspects. Describes procedures for test preparation, receipt inspection, safety, simulated environmental tests, rough handling and surface transport, air portability, airdrop capability tests, decontamination aspects, operational reliability tests, installation and maintenance aspects, leak testing, dissemination characteristics, agent/hardware compatibility tests, and human factors. Discusses data reduction and presentation to include a safety statement. Limited to riot control agent dispersers, vehicular or helicopter-mounted.

TOP 8-2-085 720980 25/08/69

SMOKE POTS

Describes a method for evaluating smoke pot technical performance and safety aspects relative to suitability for service use. Describes procedures for test preparation, receipt inspection, safety, simulated environmental tests, rough handling and surface transport, air portability, airdrop capability, dissemination characteristics, leak testing, maintenance, operational reliability, agent/hardware compatibility, and human factors. Discusses data reduction and presentation to include a safety statement.

TOP 8-2-092 871762 25/08/69

GRENADES, HAND OR WEAPON LAUNCHED, SMOKE, COLORED, MARKING

Describes a method for evaluating colored smoke grenade technical performance and safety aspects relative to suitability for service use. Describes procedures for test preparation, receipt inspection, safety, simulated

environmental tests, rough handling and surface transport, air portability, airdrop capability, radiography, dissemination characteristics, leak testing, maintenance, operational reliability, vulnerability, susceptibility to sympathetic ignition, agent/hardware compatibility, chamber test, and human factors. Discusses data reduction and presentation to include a safety statement. Limited to testing burning-type smoke grenades.

TOP 8-2-093 718746 31/10/67

GRENADES, HAND, RIOT CONTROL

Describes a method for evaluating riot control hand grenade technical performance and safety aspects relative to suitability for service use. Describes procedures for test preparation, receipt inspection, safety evaluation, simulated environmental testing, rough handling and surface transport, air portability, airdrop capability, radiography, decontamination aspects, dissemination characteristics, leak tests, operational reliability, vulnerability, susceptibility to sympathetic detonation, agent/hardware compatibility, and maintenance. Discusses data reduction and presentation to include a safety statement.

5-101
TOP 8-2-094 A261632 31/03/93

TEST AND EVALUATION OF VEHICLE-MOUNTED SMOKE GRENADE LAUNCHERS

Describes procedures for determining launch angles for vehicle-mounted smoke grenade launchers. These procedures for determining azimuth and elevation launch angles can be applied to any vehicle or system equipped with tube-launched smoke grenade delivery services.

TOP 8-2-110 A328644 01/08/97

MASKS, PROTECTIVE

Describes basic testing information to facilitate test planning, conducting and reporting, and to achieve standardization testing of protective masks. It describes test facilities, equipment, and procedures to be used for testing of protective masks. It describes test facilities, equipment, and procedures, to be used for testing and evaluating protective mask technical performance and safety aspects.

TOP 8-2-113 868301 01/06/69

BREATHING APPARATUSES, SELF-CONTAINED AIR/OXYGEN SUPPLY

Describes a method for evaluating self-contained air/oxygen supply breathing apparatus technical performance and safety aspects relative to suitability for service use. Describes procedures for test preparation, receipt inspection, safety, simulated environmental tests, rough handling and surface transport, leak tests, operational characteristics, maintenance, and human factors. Discusses data reduction and presentation to include a safety statement. Limited to tests not usually intended for protection against chemical, biological, or radiological agents.

TOP 8-2-114 868303 01/05/69

RESPIRATORS

Describes a method for evaluating respirator technical performance and safety aspects. Describes procedures for test preparation, receipt inspection, safety, simulated environmental tests, rough handling and surface transport air transport, leak tests, operational characteristics, maintenance, efficiency and reliability, and reliability and human factors. Discusses data reduction and presentation to include a safety statement. Limited to tests not intended for protective masks used to protect against chemical, biological, or radiological agents.

TOP 8-2-121 718736 31/10/67

MINES, LAND, CHEMICAL

Describes a method for evaluating chemical land mine technical performance and safety aspects. Describes procedures for test preparation, receipt inspection, safety evaluation, simulated environmental tests, rough handling and surface transport, air portability, airdrop capability, radiography, leak tests, operational reliability, dissemination characteristics, prolonged burial, agent/hardware compatibility, decontamination, vulnerability to small arms fire, susceptibility to sympathetic detonation, nuclear effects, electromagnetic radiation vulnerability, maintenance, and human factors. Discusses data reduction and presentation to include a safety statement.

TOP 8-2-136 867049 25/11/69

IMPREGNATING SETS, CLOTHING, FIELD

Describes a method for evaluating clothing impregnating set technical performance. Describes procedures for test preparation, receipt inspection safety, simulated environmental testing, rough handling and surface transport, air portability, airdrop capability, operational effectiveness tests, and human factors. Discusses data reduction and presentation to include a safety statement. Limited to evaluation of impregnating agents, not the auxiliary equipment used for impregnation.

TOP 8-2-172 A140084 02/11/83

RADIAC SURVEY INSTRUMENTATION

Describes a method to determine the technical performance of radiac survey instrumentation. Describes procedures for test preparation, directional response, accuracy, energy dependence, response time, drift, and warm-up time. Discusses data reduction and presentation.

TOP 8-2-182 B138673 01/07/89

WARHEADS, BOMBS, AND BOMBLETS FOR WARHEADS, CHEMICAL AGENT SIMULANT-FILLED

Describes test procedures required for analyzing the safety aspects and technical performance of chemical agent simulant-filled bombs and warheads. Describes general test preparations and methods for conducting the following tests: receipt inspection, safety analysis, adverse environments, airdrop delivery, fire vulnerability and down-wind hazards, susceptibility to sympathetic detonation, agent/hardware compatibility, EMR vulnerability, nuclear effects, NBC contamination survivability, operational reliability, dissemination characteristics, logistic supportability, and human factors engineering analysis.

TOP 8-2-186 718748 31/10/67

SCREENING SMOKE DISSEMINATION SUBSYSTEM FOR ARMY AIRCRAFT

Describes a method for evaluating screening smoke dissemination subsystem technical performance and safety aspects. Describes procedures for test preparation, receipt inspection, safety, simulated environmental tests, rough handling and surface transport, air portability, installation and maintenance, dissemination characteristics, operational reliability, leak tests, agent/hardware compatibility, and jettison-ability. Discusses data reduction and presentation to include a safety statement.

TOP 8-2-187 718850 25/08/69

TANKS, SPRAY, ANTIPERSONNEL, ANTICROP, AND DEFOLIANT AGENT

Describes a method for evaluating procedures used in determining spray tank technical performance and safety aspects. Describes procedures for test preparation, receipt inspection, safety, environmental tests, rough handling and surface transport, air portability, decontamination, installation and maintenance, agent dissemination, operational reliability, leak testing, agent/hardware compatibility, jettison characteristics, and human factors. Discusses data reduction and presentation to include a safety statement and safety of flight release.

TOP 8-2-190 718752 31/10/67

TARGET AND AREA SMOKE MARKING MUNITION SUBSYSTEM FOR ARMY AIRCRAFT

Describes a method for evaluating dispenser and smoke munition physical and performance characteristics. Describes procedures for test preparation, receipt inspection, safety, simulated environmental, rough handling and surface transport, air portability, radiography, installation and maintenance, operational reliability, dissemination characteristics, nuclear effects, susceptibility to sympathetic detonation, agent/hardware compatibility, leak testing, and human factors. Discussed data reduction and presentation to include a safety statement and safety of flight release.

TOP 8-2-191 725542 27/10/67

ALARMS, CHEMICAL

Describes a method for evaluating chemical alarm physical and technical performance characteristics and safety aspects. Describes procedures for test preparation, receipt inspection, safety, simulated environmental testing, rough handling and surface transport, airdrop capability, decontamination aspects, maintenance, operational characteristics, electromagnetic radiation vulnerability, nuclear effects, and human factors. Discusses data reduction and presentation to include a safety statement.

TOP 8-2-192 719127 30/11/67

COLLECTIVE PROTECTION SYSTEMS, VEHICLES AND VANS

Describes a method for evaluating collective protection system technical performance and safety aspects. Describes procedures for test preparation, receipt inspection, safety, reliability, flammability, protective material characteristics, agent penetration and simulated environmental tests, field operations, rough handling and surface transportability, portability, chemical and biological protection, special "gas" tests, alarm and gas life tests, decontamination, emergency measures, maintainability, and human factors. Discusses data reduction and presentation to include a safety statement.

TOP 8-2-193 721278 30/11/67

COLLECTIVE PROTECTION SYSTEMS, FIELD SHELTERS

Describes a method for evaluating field collective protection system technical performance and safety aspects. Describes procedures for test preparation, receipt inspection, safety, reliability, flammability tests, protective material characteristics, agent penetration and simulated environmental tests, field operations, rough handling and surface transportability, air drop capability, chemical and biological protection, emergency measures, alarm and gas life tests, decontamination, maintenance, and human factors. Discusses data reduction and presentation to include a safety statement.

TOP 8-2-194 868358 02/03/70

COLLECTIVE PROTECTORS, FIXED-INSTALLATION

Describes a method for evaluating collective protector technical performance and safety aspects. Describes procedures for test preparation, receipt inspection, installation, safety, simulated environmental tests, rough handling and surface transport, air portability, airdrop capability, leak testing, filter tests, operational reliability, decontamination, maintenance and human factors. Discusses data reduction and presentation to include a safety confirmation. Not applicable to collective protection systems or collective protectors designed for use in vehicles, vans, and field shelters.

TOP 8-2-195 718769 30/11/67

MULTIPLE SUBMUNITIONS SYSTEMS, RIOT CONTROL

Describes a method for evaluating multiple riot control submunitions technical performance and safety aspects. Describes procedures for test preparation, receipt inspection, safety, simulated environmental tests. rough handling and surface transport, air portability, airdrop capability, leak tests, operational reliability, agent dissemination, agent/hardware compatibility, decontamination, vulnerability, maintenance, and human factors.

TOP 8-2-500 143686 01/07/84

RECEIPT INSPECTION OF CHEMICAL-BIOLOGICAL (CB) MATERIEL

Describes methods for receipt inspection of CB materiel and systems tested by TECOM. Supplementary sources of guidance are indicated when required. Provides guidance on how to plan and conduct receipt inspection, including hazardous materiel. Also provides specific test procedures, checklists, and data collection sheets.

TOP 8-2-501 A322329 03/03/97

PERMEATION AND PENETRATION TESTING OF AIR-PERMABLE, SEMI-PERMEABLE, AND IMPERMEABLE MATERIALS WITH CHEMICAL AGENTS OR SIMULANTS(SWATCH TESTING)

Describes the current standard for planning and conducting tests to measure the permeation or penetration of swatches of materials by chemical agents such as distilled mustard (HD), or the nerve agents sarin (GB), or V-agent (VX). The swatches may be single or multi-layered, inert, sorptive or reactive. Swatches may be taken from candidate or standardized fabrics, in which case application of this TOP can provide relative ranking or screening information about the ability of the standardized and/or candidate materials to resist permeation or penetration by chemical agents. Swatches may also be taken from garments that are new, have been stored, or have been worn for various times under different conditions. Testing these material swatches using the procedures in the TOP can provide data to evaluate the effects of the different condition of wear. This TOP is not adequate for the assessment of the ability of an end item clothing made from any tested material to protect the wearer. The data obtained by these procedures cannot be correlated to field conditions. One or more of the test procedures given may be required in a detailed test plan (DTP).

TOP 8-2-510 A113462 30/04/82

CBR CONTAMINATION/ DECONTAMINATION PHASE OF DEVELOPMENT TESTS

Describes methods for assessing an item's suitability for use in a CBR environment. The procedures are not designed for performance testing of CBR protective items.

TOP 8-2-511 718849 29/02/68

LEAK TESTING OF PROTECTIVE EQUIPMENT

Describes a method for evaluating procedures used in leak testing of CB protective equipment. Describes procedures for test preparation, visual inspection, safety hazards, pressurization tests, detection, sampling, analysis, and determination of leakage rate.

TOP 8-2-512 733301 01/11/71

LEAK TESTING OF CHEMICAL AGENT-FILLED MUNITIONS AND CONTAINERS

Describes a method for evaluation of procedures used in leak testing chemical munitions or containers. Describes procedures for test preparation, safety, visual inspection, detection, sampling, analysis and helium tank testing. Discusses data reduction and presentation to include a Safety Statement.

TOP 8-2-513 733297 01/11/71

DISSEMINATION CHARACTERISTICS, CHEMICAL MUNITIONS/DISSEMINATION DEVICES

Describes a method for evaluating procedures used in determining dissemination characteristics of chemical munitions/dissemination devices. Describes procedures for determining control sample characteristics, agent dissemination rate, droplet size or particle sizing, source strength and agent dissemination efficiency, agent cloud characteristics, agent decay, factors, infectivity changes, and residual hazards.

TOP 8-2-514 746226 28/03/71

MICROBIOLOGICAL AIR SAMPLING IN THE TROPICS

Describes a method for qualitatively and quantitatively estimating airborne microorganisms in a tropical environment. Identifies and describes facilities and equipment required. Provides procedures for calibration of airflow through membrane filter, air sampling, sample preparation, and microorganism counting and identification. Applicable to wet-hot and wet-warm climates.

TOP 8-2-552 A143472 01/07/84

GRENADES, HAND OR FIXTURE LAUNCHED, SMOKE/INCENDIARY

Describes guidance for evaluating the technical performance and safety aspects of smoke and incendiary grenades. Describes procedures for test preparation, receipt inspection, safety, environmental effects, hazardous operations, air transportability, functioning and reliability, human factors engineering, and maintenance. Discusses data reduction and presentation. Limited to testing smoke and incendiary grenades.

TOP 8-2-553 A072672 01/08/79

SAFETY EVALUATION - CB ITEMS

Describes development test procedures required to determine whether equipment is free from design, operational, or support hazards which could prevent accomplishment of intended missions. Checklists and hazard analysis formats are provided to assist test personnel in assessing hazards.

TOP 8-2-555 A209262 28/04/89

CHEMICAL AGENT DETECTOR KITS

Describes general procedures and guidance for determining the technical performance and safety aspects of chemical agent detector kits that are designed to detect the presence of chemical agents in the atmosphere, on the surfaces of various materials (metal, wood, glass, cloth, etc.), and in water. These procedures include: test preparations, test controls, receipt inspection, safety analysis, operator training, initial performance, accelerated packaged storage and sequential rough handling, adverse environments, operations with arctic and CB protective clothing, NBC contamination survivability, airdrop capability, battlefield interferents/contaminants, HFE, and logistics supportability.

TOP 8-3-080 726350 05/03/71

AIRBORNE DISSEMINATION DEVICES

Describes a method for evaluating airborne dissemination device physical and performance characteristics relative to suitability for service use. Describes procedures for test preparation, initial inspection, inventory check, physical characteristics, preoperational inspection, installation characteristics, flight characteristics tests, operational effectiveness, maintenance, maintainability, reliability, tools and test equipment, publications, safety, and human factors. Discusses data reduction and presentation to include a safety statement. Applies as a basic guide for the responsible test activity employing the agent dissemination devices.

TOP 8-3-512 A108944 15/12/81

TROPIC TESTS OF CHEMICAL EQUIPMENT

Describes procedures for tropic testing of chemical munitions, weapons, and equipment and their ability to withstand the humid tropic environment. Specifies procedures and conditions under which testing and data evaluation are to be performed. Applies to the basic climatic design type, quadripartite standardization agreement equivalents B1 and B2. Procedures are oriented to tests chemical offensive weapons and defensive, protective, and decontamination equipment. Divides tropic testing into two parts - test conduct and test data. Treats each of these parts according to initial inspection, functional performance, short-term storage, surveillance (long-term storage), maintenance evaluation, human factors, etc.

TOP 8-4-001 721281 01/11/71

DESERT ENVIRONMENTAL TEST OF CHEMICAL, BIOLOGICAL AND RADIOLOGICAL EQUIPMENT

Describes a system for evaluating chemical, biological, and radiological (CBR) equipment desert environmental performance characteristics. Prescribes procedures for test preparation, exposure (storage, transportation, handling, and airdrop), performance, security from detection, maintenance, and safety. Applies to field testing. Excludes simulated environments.

TOP 8-4-003 878321 06/03/72

CHEMICAL EQUIPMENT

Describes a method for evaluating chemical equipment physical and performance characteristics. Describes procedures for test preparation, initial inspection, operational performance, short-term storage, surveillance (long-term storage), maintenance, safety, human factors, security from detection, and value analysis. Discusses data reduction and presentation to include a safety statement. Applies to field testing of chemical munitions, weapons, and equipment.

TOP 8-4-004 719130 01/11/71

LONG TERM SURVEILLANCE/ENVIRONMENTAL TESTING OF CB EQUIPMENT AND CHEMICAL MUNITIONS AND WEAPONS

Describes a method for evaluating chemical, biological, and radiological (CBR) material physical and performance characteristics relative to suitability for long-term surveillance. Describes receipt inspection, graphic requirements, cyclic schedules, meteorological data, prestorage tests, storage, cyclic inspections, and tests. Applies to general procedures for surveillance/environmental testing for all CBR items.

TOP 8-4-005 A163640 08/01/86

COLD REGIONS TEST OF NUCLEAR, BIOLOGICAL AND CHEMICAL EQUIPMENT

Describes a method for evaluating chemical biological (CB) alarms and collective protection systems physical and performance characteristics relative to exposure to arctic environmental conditions. Describes procedures for test preparation, preoperational inspection, physical characteristics, agent challenge test, purge time challenge, operational reliability, functional suitability, maintenance, safety, and human factors. Applies to general procedures and considerations employed in arctic environmental testing of CB alarms and collective protection systems.

TOP 8-4-006 A205779 28/02/89

COLD REGIONS TEST OF CB PROTECTIVE MASKS, CLOTHING AND KITS

Describes a method for evaluating chemical-biological protective clothing and equipment physical and performance characteristics. Describes procedures for test preparation, preoperational inspection, physical characteristics, rough handling, surface transport, operational reliability, chemical challenge, maintenance, and human factors. Discusses data reduction and presentation. Limited to the testing of CB protective clothing, protective masks, and winterization kits in an arctic winter environment.

TOP 8-4-007 A158593 17/05/85

COLD REGIONS TEST OF NBC DECONTAMINATION EQUIPMENT

Describes methods for evaluating nuclear, biological, and chemical (NBC) decontamination equipment in the natural cold regions environment. It contains procedures for evaluating storage, transportation, environmental performance, logistic supportability, reliability, human factors, and safety. It describes the necessary facilities and instrumentation requirements for test accomplishment.

TOP 8-4-011 872078 08/06/70

ARCTIC TEST OF SMOKE MUNITIONS AND GENERATING EQUIPMENT

Describes a method for evaluating smoke munition and generating equipment performance characteristics, Discusses procedures for test preparation, initial inspection, physical characteristics, human factors, safety, rough handling, surface transportability, pressure test, reliability, and maintenance evaluation. Limited to general testing under arctic conditions.

TOP 8-4-012 867073 26/11/69

ARCTIC ENVIRONMENTAL TEST OF CHEMICAL AGENT DETECTOR KITS

Describes a system for evaluating chemical agent detector kit performance. Procedures for preoperational inspection, physical characteristics, human factors, safety, rough handling, surface transportability, field detection, and operational characteristics, and maintenance evaluation tests. Limited to general testing under arctic conditions.

TOP 8-4-014 867022 26/11/69

ARCTIC ENVIRONMENTAL TEST OF WATER HANDLING, STORAGE AND PURIFICATION EQUIPMENT

Describes a method for evaluating water handling. storage, and purification equipment. Describes procedures for test preparation, preoperational inspection, physical characteristics, transportability, functional suitability, human factors, safety, and maintenance evaluation. Limited to general testing under arctic conditions.

TOP 8-4-015 A158729 24/06/85

COLD REGIONS LOGISTIC SUPPORTABILITY TESTING OF CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL DEFENSE EQUIPMENT

Describes test methods and techniques necessary to perform a logistic supportability test of chemical, biological, and radiological defense equipment in a cold regions environment.

TOP 9-1-001 726889 05/06/71

CONSTRUCTION, SUPPORT, AND SERVICE EQUIPMENT

Describes a method for evaluating construction, support, and service equipment physical and performance characteristics relative to suitability for service use. Describes procedures for test preparation, efficiency of POL support equipment, bridging equipment, prefabricated buildings, construction equipment, gas generating and charging equipment, shop equipment, and waterway equipment. Discusses data reduction and presentation. Introduces concepts for testing construction, support, and service equipment.

TOP 9-2-010 879230 06/11/70

BATH UNITS

Describes a method for evaluating bath unit performance characteristics. Discusses pretest requirements for initial inspection, inventory of basic issue items, physical characteristics, operator training, functional verification, instrumentation, and equipment. Provides procedures for operation and performance effects, kit adequacy, electromagnetic compatibility, environmental, durability, transportability, maintainability, reliability, safety, human factors, value analysis, and quality assurance. Appendix provides sample reliability calculations.

TOP 9-2-016 725544 17/05/71

BUILDINGS, PREFABRICATED

Describes a system for evaluating prefabricated buildings. Discusses pretest requirements for initial inspection, inventory of basic issue items, physical characteristics, facilities, and equipment. Describes procedures for site selection, assembly and erection, building strength, environmental effects, durability, transportability, maintainability, reliability, safety, human factors, value analysis, and quality assurance tests. Provides a method for data reduction and presentation.

TOP 9-2-027 738844 23/02/72

BRIDGES AND EQUIPMENT

Describes a method for evaluation of bridge operational and functional performance characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for site selection, assembly, disassembly, launching, retrieving, static load, dynamic load, mobility, and anchorage system tests. Applicable to highway, railway, floating, mobile, panel, and suspension type bridges for vehicular and foot traffic to include accessory equipment inherent to the bridge mission.

TOP 9-2-046 734854 01/12/71

CONVEYOR EQUIPMENT

Describes a system for evaluating conveyor equipment operational and performance characteristics. Designates procedures for preoperational inspection, physical characteristics, safety, performance tests, environmental tests, transportability, human factors evaluation, reliability, durability, maintenance evaluation, and value analysis. Not applicable to service testing or environmental testing at climatic test sites.

TOP 9-2-063 775433 02/08/67

CRANE TRUCK, WAREHOUSE

Describes a system for evaluating warehouse crane truck performance characteristics. Discusses pretest requirements for initial inspection, physical characteristics, inventory of basic issue items, safety precautions, instrumentation, facilities, and equipment. Provides procedures for clutch pedal, steering, service brake, load line hook, boom topping, slueing, crane speed, acceleration, acceleration response, slope, parking brake, under-clearance, stopping distance, suitability, lifting attachment, structural load, overload, power train static torque, controls, hook and cable, durability, postoperational inspection, maintenance, safety evaluation, human factors, and value analysis tests.

TOP 9-2-064 726892 01/07/71

CRANE, SHOVEL, TRACKED AND WHEELED

Describes a method for evaluating crane shovel performance characteristics. Provides procedures for packaging and test item inspection, inventory, preliminary operations, physical characteristics, operator training, pre-operational check, laboratory tests, crane stability, load strain, hoist line speed and power, mobility, brake, fuel consumption, environmental effects, electromagnetic interference, durability, transportability, maintenance, reliability, safety, human factors, value analysis, and quality assurance. Limited to self-propelled wheel or tracked crane shovel units.

TOP 9-2-071 739589 09/03/72

EARTH LOADING EQUIPMENT

Describes a method for evaluation of earthloading equipment operational and functional performance characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for safety, functional performance, loading, and capacity rating to include tables establishing minimum performance standards.

TOP 9-2-072 877649 05/10/70

TRAILER, CABLE REEL

Describes a method for evaluating cable reel trailer performance characteristics. Discusses preoperational requirements for initial inspection, inventory of basic issue items, physical characteristics, operator training, instrumentation, and equipment. Provides procedures for electrical equipment, towing hitch, brakes, interaction with towing vehicle, fording, mobility, compatibility, environmental effects, durability, transportability, maintainability, reliability, safety, human factors, value analysis, and quality assurance tests.

TOP 9-2-082 746228 22/05/72

EARTHMOVING EQUIPMENT

Describes a method for evaluation of earthmoving equipment performance and operational characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for test planning, compatibility with related equipment, bulldozing earthmoving operations, scraper earthmoving operations, performance, salt fog, reliability, and endurance. Applies to auger, angledozer, bulldozer, ditching machine, grader, and scraper.

TOP 9-2-111 737714 12/04/72

PAVING EQUIPMENT

Describes a method for evaluation of paving equipment operational and functional performance characteristics. Identifies supporting test, facilities, and equipment required. Specifies procedures for operator training, photographic coverage, safety, initial inspection, physical environmental effects, maintenance, reliability, transportability, durability, and value analysis.

TOP 9-2-116 873523 30/06/70

CRUSHING, SCREENING, AND WASHING PLANT

Describes a method for evaluating crushing, screening, and washing plant performance characteristics. Describes typical processing plant major components. Discusses pretest requirements for initial inspection, inventory of basic issue items, physical characteristics, operator training, intrumentation, facilities, and equipment. Provides procedures for performance, power and fuel requirements, mobility, environmental effects, electromagnetic interference, durability, transportability, maintenance, safety, human factors, value analysis, and quality assurance. Applies to rock, gravel, and sand crushing and cleaning plants.

TOP 9-2-124 872824 06/07/70

ROAD GRADERS

Describes a method for evaluating road grader performance characteristics. Discusses preoperational requirements for initial inspection, inventory of basic issue items, physical characteristics, instrumentation, facilities, equipment, and break-in. Provides procedures for clutch, steering, wheel lean, brakes, electrical, cooling, accessory items, power train, warm up, cold starting, drawbar pull, acceleration, travel speed, fuel consumption, turning radius, gradeability, side slope, fording, blade pull, tandem rotation, readability, actuating mechanism, ground clearance, circle assembly moldboard rigidity, blade control, towing, rain, radio interference, endurance, sectionalization, transportability, maintenance, safety, etc.

TOP 9-2-145 726004 01/07/71

LIQUID TRANSPORTING AND DISPENSING EQUIPMENT

Describes a method for evaluating liquid transporting and dispensing equipment performance characteristics. Provides procedures for test preparation, operational performance, environmental effects, durability, transportability, maintenance evaluation, reliability, safety, human factors, value analysis, and quality assurance.

TOP 9-2-155 721611 23/03/70

MOTORS, ELECTRICAL

Describes a method for evaluating electric motor performance characteristics. Discusses pretest requirements for initial inspection, inventory of basic issue items, physical characteristics, operator training, instrumentation, facilities, and equipment. Provides procedures for electrical characteristics, dynamic balance, operational performance, inclined interference, durability, environmental effects, transportability maintenance, safety, human factors, value analysis, and quality assurance tests. Applies to AC or DC motors.

TOP 9-2-166 872320 26/06/70

AIR COMPRESSOR

Describes a method for evaluating air compressor performance characteristics. Discusses operational requirements for initial inspection, physical characteristics, operator training, instrumentation, facilities, and equipment. Provides procedures for rated capacity automatic regulation, titled position, endurance, cycling, fuel contamination, radio factors, value analysis, and quality assurance tests.

TOP 9-2-167 871779 18/05/70

TOOLS, HAND, PNEUMATIC

Describes a method for evaluating pneumatic handtool performance characteristics. Describes pretest requirements for initial inspection, physical characteristics, operator training, instrumentation, facilities, and equipment. Provides procedures for functional performance, endurance, environmental effects, maintenance, safety, human factors, value analysis, and quality assurance tests. Applies to hand-held, rotary, rotary impact, percussion, percussion rotation, and vibrating pneumatic tools used in field construction work.

TOP 9-2-181 718572 05/03/68

PUMP, CENTRIFUGAL

Describes a method for evaluating centrifugal pump performance characteristic. Discusses preoperational requirements for initial inspection, physical characteristics, operator training, instrumentation, facilities, and equipment. Provides procedures for balancing, hardness, hydrostatic, priming, suction loss, discharge pressures, reliability, environmental effects, transportability, maintenance, human factors, value analysis, and safety tests.

TOP 9-2-182 718573 11/03/68

PUMP, RECIPROCATING

Describes a method for evaluating reciprocating pump performance characteristics. Describes pretest requirements for initial inspection, physical characteristics, operator training, instrumentation, facilities and equipment. Provides procedures for hydrostatic, priming, suction loss, discharge pressure, reliability, environmental effects, transportability, maintenance, and human factors, safety, and value analysis tests.

TOP 9-2-201 869820 25/03/70

BLOCK AND TACKLE

Describes a method for evaluating block and tackle performance characteristics. Discusses pretest requirements for initial inspection, inventory of basic issue items, physical characteristics, operator training, facilities, and equipment. Provides procedures for rope tensile strength, block strength, composite performance, mechanical advantage, durability, transportability, maintenance, safety, human factors, value analysis, and quality assurance test. Prescribes a system for data reduction and presentation.

TOP 9-2-202 872323 23/06/70

HOISTS, CHAIN AND WIRE ROPE

Describes a method for evaluating chain and wire rope hoists. Describes preoperational requirements for initial inspection, inventory of basic issue items, physical characteristics, operator training, functional check, instrumentation, facilities, and equipment. Provides procedures for electrical, rated capacity, static overload, dynamic overload, impact, tract clamp, environmental effects, electromagnetic interference, durability, transportability, maintenance, safety, human factors, value analysis, and quality assurance test. Applies to electrical or manually powered hoists with fixed or trolley suspension.

TOP 9-2-203 876405 03/08/70

CUTTERS, FLOOR MOUNTED

Describes a method for evaluating floor-mounted cutters. Discusses pretest requirements for initial inspection, inventory or basic issue items, physical characteristics, operator training, instrumentation facilities, and equipment. Provides procedures for machine balance, input, consumption, speed moving components, power line variation, brakes, mechanical overload, alignment performance, electromagnetic interference, environmental effects, durability, maintenance, safety, human factors, value analysis, and quality assurance tests.

TOP 9-2-207 871744 22/05/70

LATHES

Describes a method for evaluating lathe performance characteristics. Discusses pretest requirements for initial inspection, inventory of basic issue items, physical characteristics, operator training, functional check, instrumentation, facilities, and equipment. Provides procedures for rough cut, finish cut, threading, taper, boring, electromagnetic interference, durability, transportability, maintenance, safety, human factors, value analysis, environmental effects, and quality assurance tests. Applies to electric motor-driven lathes.

TOP 9-2-211 721282 25/08/69

SANDERS, BELT OR DISK

Describes a method for evaluating electric sanders. Describes preoperational requirements for initial inspection, inventory of basic items, operator training, physical characteristics, instrumentation, facilities, and equipment. Describes procedures for electrical characteristics, vibration, power consumption, operating speed, dust collector, electromagnetic interference, durability, transportability, maintainability, reliability, safety, human factors, and value analysis. Applies to disk and belt sanders.

TOP 9-2-212 875670 28/07/70

TOOL SETS

Describes a method for evaluating tool sets. Discusses pretest requirements for initial inspection, inventory of basic issue items, physical characteristics, instrumentation, facilities, and equipment. Provides procedures for cylinder head, engine block, tubing, cutting, welding, special tools, arctic desert, intermediate climatic, endurance, transportability, maintenance, compatibility, safety, human factors, value analysis, and quality assurance tests. Applies to standard/special tool equipment.

TOP 9-2-235 718574 09/06/67

TANKS, LIQUID STORAGE, FABRIC, COLLAPSIBLE

Describes a method for evaluating storage tank performance characteristics. Describes pretest requirements for initial inspection, physical characteristics, operator training, instrumentation, facilities, and equipment. Prescribes procedures for erection, initial checkout, relocation, filling, emptying, pressure surge, valve induced surge, pumping, water drain system, static fuel storage, manifold adaptability, maintenance, durability, safety, and human factors tests. Applies to collapsible (fabric) petroleum liquid storage tanks with a 1250, 2500, or 5000 barrel capacity.

TOP 9-2-236 718592 03/07/67

TANKS, LIQUID STORAGE, METAL

Describes a method for evaluating metal liquid storage tank performance characteristics. Discusses pretest requirements for initial inspection, physical characteristics, operator training, instrumentation, facilities, and equipment. Provides procedures for erection, initial checkout, relocation, filling, emptying, water drain facility, pressure surge, static fuel storage, postoperation inspection, manifold adaptability, environmental effects, maintenance, safety, and human factors tests. Applies to rigid tanks for liquids such as petroleum fuel and nonpotable water.

TOP 9-2-240 731190 01/08/71

TRACTORS, WHEELED, AGRICULTURAL

Describes a method for evaluating wheeled agricultural tractor performance characteristics. Provides procedures for test preparation, initial inspection, inventory of basic items, preliminary operations, laboratory tests, physical characteristics, operator training, clutch, steering, brake, electrical system, cooling, accessory item, drawbar pull, wheel slippage, acceleration, speed, fuel consumption, turning radius, durability, radio frequency interference, environmental effects, transportability, maintenance evaluation, reliability, safety, human factors, value analysis, and quality assurance tests.

TOP 9-2-251 759772 18/08/72

WATERWAY EQUIPMENT - BOAT, BARGE, MOTOR

Describes a method for evaluation of waterway equipment performance and operational characteristics. Identifies facilities and equipment required. Discusses supporting tests. Provides procedures for watertight integrity, stability, static flotation, dynamic pitch and roll, dock trials, components and subsystems, bollard pull tests, sea trials, turning radius, towing and resistance, beaching, ramp operation, operational performance, communications and navigation equipment, inflation (inflatables), pressure (inflatables), and leakage (inflatables) tests. Applicable to barges and lighters; passenger, cargo, landing, assault, picket, patrol, tug, tow, and special purpose boats.

TOP 9-2-270 726911 27/05/71

WATER SUPPLY AND TREATMENT EQUIPMENT

Describes a method for evaluating water supply and treatment equipment performance characteristics. Provides procedures for test preparation, performance, kits, environmental effects. electromagnetic interference, durability, transportability, maintenance evaluation, reliability, safety, human factors, value analysis, and quality assurance. Limited to system test of units previously evaluated as suitable for military use.

TOP 9-2-285 718791 23/12/70

DUST CONTROL MATERIEL

Describes a method for evaluating dust control material. Discusses pretest requirements for initial inspection, inventory of basic issue items, physical characteristics, operator training, functional check, and membrane, kits, environmental effects, durability, transportability, maintenance, safety, human factors, value analysis, and quality assurance tests. Not applicable to concrete bituminous paving, vegetation, and reusable landing mats as palliative agents.

TOP 9-2-286 869839 25/03/70

POWER GENERATORS

Describes a method for evaluating power generator technical performance and safety characteristics relative to suitability for service use. Describes procedures for test preparation, operational performance, environmental tests, electromagnetic interference, durability, transportability, maintenance, safety, human factors, value analysis, and quality assurance. Discusses data reduction and presentation. Applies to portable, self-contained power generators that are skid mounted and provide 200kw or less continuous output power when fully loaded.

TOP 9-2-294 738845 14/01/72

POL SUPPORT EQUIPMENT

Describes a method for evaluating POL support equipment operational and functional performance characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for batch interface detection, fuel contamination level, switching manifold, strainer, and trap tests. Applies to hoselines, pipelines, pressure regulators, switching manifolds, monitoring devices, batch detectors, fuel testers, filters, separators, strainers, and traps.

TOP 9-2-305 759236 26/01/73

RADIOGRAPHIC EQUIPMENT SET

Describes a method for evaluation of radiographic equipment operational and functional performance characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for safety, operator training, initial inspection, physical characteristics, performance, environmental, transportability, durability, human factors, and reliability testing. Applicable to portable radiographic equipment used in evaluation of structural integrity and interior constitution of weldments, vehicle structures, castings, and assemblies such as ammunition fuzes and dud rounds. Excludes medical equipment and test at climatic test sites.

TOP 9-4-001 718595 30/08/68

DESERT ENVIRONMENTAL TESTING OF CONSTRUCTION, SERVICE, AND SUPPORT EQUIPMENT

Describes a method for evaluating construction, service, and support equipment. Provides procedures for test preparation, safety, exposure, performance, security from detection, maintenance, data collection, and reporting. Limited to desert field testing. Not applicable to waterways equipment and railway rolling stock.

TOP 9-4-003 720562 13/01/71

CONSTRUCTION, SUPPORT AND SERVICE EQUIPMENT

Describes a method for evaluating construction, support, and service equipment. Provides procedures for test preparation, operational performance, storage, surveillance, security from detection, maintenance, safety, human factors, and value analysis. Limited to field testing in the humid tropics. Excludes simulated environmental tests.

TOP 9-4-006 A158714 25/06/85

COLD REGIONS LOGISTIC SUPPORTABILITY TESTING OF CONSTRUCTION, SUPPORT AND SERVICE EQUIPMENT

Describes methods and techniques necessary to perform a logistic supportability test of construction, support and services equipment in a cold regions environment.

TOP 10-1-003 866906 03/12/69

DESERT TERRAIN

Describes background information relative to desert testing. Defines a desert. Discusses terrain classification by physical geography, geomorphology, and physiographic association systems. Describes deserts containing stone, gravel, and sand to include desert components such as mountains, badlands, hills, fans, washes, flats, sand dunes, and fields. Discusses the development of desert landscapes. Describes physiographic association classification as used by Corps of Engineer Waterway Experiment Station (WES). Provides a table on desert component distribution worldwide. Discusses transportation, storage, and performance testing.

TOP 10-1-004 759771 02/10/71

DESERT ENVIRONMENTAL TEST OF GENERAL SUPPLIES AND EQUIPMENT

Describes a method for evaluation of general supplies and equipment operational and functional performance characteristics. Discusses preliminary operations, facilities, and equipment required. Provides procedures for exposure, performance, security from detection, maintenance evaluation, safety, and human factors. Appendixes define classes of supplies.

TOP 10-2-011 741868 30/12/71

BAKERY EQUIPMENT

Describes a method for evaluation of bakery equipment operational and performance characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for performed polyurethane board, mechanical flour sifter, and dough mixing machine performance tests. Applicable to flour sifters, dough mixers, dough troughs, dividing machines, molding machines, mixing and makeup outfits, proofing cabinets, ovens, and accessory sets.

TOP 10-2-021 763001 06/02/73

COMBAT UNIFORMS AND PROTECTIVE EQUIPMENT

Describes a method for evaluation of combat uniforms and protective equipment operational and functional performance characteristics. Identified supporting tests, facilities, and equipment required. Discusses test planning and preparation for tests. Provides procedures for physical characteristics, protection against agents, sizing, fitting, donning, doffing, functional suitability, leakage, water exposure, infrared reflectance, static electricity, filter gas life, launderability, storage, water immersion, transportability, human factors, reliability, durability, and maintenance evaluation. Appendixes discuss test courses, sizing and fitting, donning and doffing data and boot impregnating procedures.

TOP 10-2-023 719139 04/04/68

INDIVIDUAL LOAD-CARRYING EQUIPMENT

Describes a system for evaluating individual load-carrying equipment performance characteristics. Describes procedures for initial inspection, physical characteristics, coding, user medical examination, personnel training, donning, doffing, adjustment, controlled field wear, laboratory analysis, water resistance, durability, identification of materials, salt spray exposure, colorfastness, gloss, temperature, humidity, static electric charge, immersion, flammability, fungus, puncture, crocking, breaking strength, clothing compatibility and sizing, value analysis, safety hazards, and maintenance evaluation tests. Applies to hot, temperate, and cold wet regions evaluation. Excludes cold dry arctic.

TOP 10-2-030 719140 28/02/69

DRAFTING EQUIPMENT

Describes a method for evaluating drafting equipment performance characteristics. Provides procedures for test preparation, performance, material evaluation, environmental storage, transportability, safety, maintainability, reliability, human factors, and value analysis. Applies to general purpose drafting equipment such as instrument sets, templates, ruler, T-squares, and drafting machines. Not applicable to automatic or electrically powered equipment.

TOP 10-2-036 741928 01/05/72

FIELD HEATING AND COOKING EQUIPMENT

Describes a method for evaluating field heating and cooking equipment operational and functional performance characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for adjustment, control accuracy, heat distribution, and efficiency. Not applicable to space heaters, field mess equipment, and test at climatic test sites.

TOP 10-2-050 742516 20/04/72

FIRE HOSES AND ASSEMBLIES

Describes a method for evaluating fire hose and fire hose assembly operational and performance characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for leakage, resistance to vacuum, fitting retention, pull resistance, coupling compatibility, and coupling reattachability tests.

TOP 10-2-051 867353 12/07/69

FIRE EXTINGUISHERS

Describes a method for evaluating fire extinguisher performance characteristics. Describes procedures for test preparation, hydrostatic strength, component usage and operability, gunfire effects, hose evaluation, packed chamber, maximum pressure, performance, leakage, vibration, transportability, safety, maintainability, reliability, human factors, and value analysis tests. Applies to portable fire extinguishers of the hand, back-packed, wheeled, and skid- or platform-mounted types.

TOP 10-2-060 719144 19/05/69

FUEL THICKENERS, FLAME THROWERS

Describes a method for evaluating flamethrower fuel thickener performance characteristics. Provides procedures for initial inspection, physical and chemical characteristics, safety evaluation, leak, environmental effects, decontamination, rough handling, transportability, air-drop capability, operational performance, and laboratory analysis tests.

TOP 10-2-066 719145 23/05/69

FANS, ELECTRIC

Describes a method for evaluating electric fan performance characteristics. Provides procedures for test preparation, preliminary electrical evaluation, performance, electromagnetic interference, balance, durability, transportability, environmental effects, maintainability, reliability, safety, human factors, and value analysis. Applies to air moving devices whether classified a fan, blower, exhauster, or booster.

TOP 10-2-067 870553 28/07/69

BOILERS, STEAM AND HIGH TEMPERATURE WATER

Describes a method for evaluating boiler performance characteristics. Provides procedures for test preparation, preliminary electrical measurements, strength, tightness, pressure, operations, performance, electromagnetic interference, durability, balance, transportability, maintainability, reliability, safety, human factors, and value analysis. Not applicable to nuclear and combined cycle steam generators.

TOP 10-2-068 719146 03/07/69

DEHUMIDIFIERS

Describes a method for evaluating dehumidifiers performance characteristics. Provides procedures for test preparation, preliminary electrical measurements, operation and performance, electromagnetic interference, durability, environmental effects, balance, transportability, maintainability, reliability, safety, human factors, and value analysis. Limited to self-contained electrical dehumidifiers, refrigeration, and sorption, which extract moisture as air is passed through the test item.

TOP 10-2-072 742517 20/04/72

HEATING EQUIPMENT

Describes a method for evaluation of heating equipment operational and performance characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for heating capacity and smoke tests. Applicable to space, radiant, portable nonduct and duct type heaters.

TOP 10-2-080 719178 12/05/67

CONTAINERS, PALLETS, PALLET CONTAINERS, CONEX CONTAINERS

Describes a method for evaluation palletized and CONEX container performance characteristics. Provides procedures for preoperational inspection, assembly, packaging, stacking, shipping, handling, storage, environmental effects, vertical deceleration, vertical pull, and shock tests. Appendices provide a method for data collection.

TOP 10-2-085 719183 12/06/69

LUBRICATING AND SERVICING UNITS

Describes a method for evaluating lubricating and service unit performance characteristics. Describes procedures for test preparation, preliminary electrical tests, performance, electromagnetic compatibility, transportability, environmental storage, maintainability, reliability, safety, human factors, and value analysis.

TOP 10-2-100 719184 16/04/69

PRESERVATION AND PACKING EQUIPMENT

Describes a method for evaluating preservation and packing equipment performance characteristics. Provides procedures for pretest inspection, physical characteristics, performance, efficiency, functional suitability, leakage, electromagnetic compatibility, environmental storage, transportability, maintainability, reliability, human factors, safety, and value analysis. Excludes general handtools and shop tools, machines, carpentry tools, compressor equipment, chain hoists, conveyors, and general equipment items.

TOP 10-2-106 725551 22/05/69

BINOCULARS

Describes a method for evaluating binoculars. Provides procedures for test preparation, mechanical evaluation, eyepiece focus, reticle alinement, collimation, resolution, angular magnification, linear distortion, field of view, relative light efficiency, extreme temperatures (-80 °F and +160 °F) effects, transportability, maintainability, reliability, safety, human factors, and value analysis tests. Excludes infrared type binoculars.

TOP 10-2-107 719185 21/03/68

METASCOPES - INFRARED, IMAGE-FORMING

Describes a method for evaluating image-forming infrared metascope performance characteristics. Provides procedures for test preparation, receiver brightness, gain resolving power, receiver linear distortion, field of view, focus range, infrared light source characteristics, light source receiver alignment, filter characteristics, maintenance, transportability, safety, human factors, and value analysis tests. Applies to devices which use image converter tubes.

TOP 10-2-108 719186 20/08/68

STEREOSCOPES

Describes a method for evaluating stereoscope performance characteristics. Provides procedures for test preparation, working distance, focus, image jump, resolution, field of view, distortion, color correction, magnification, optical and physical orientation, and dual optical bench tests. Applies to fixed power and variable power lens devices. Excludes test of light tables, roll film holders, and other ancillary equipment.

TOP 10-2-109 719187 12/06/69

TELESCOPES

Describes a method for evaluating telescopes technical performance and safety characteristics relative to suitability for service use. Describes procedures for test preparation, mechanical operation, reticle accuracy, eyepiece focus, resolution, angular magnification, linear distortion, field of view, relative light efficiency, extreme temperature effects, transportability, maintainability and reliability, safety, human factors, and value analysis. Applies to all types of telescopes except observation telescope mechanical and image assessment tests.

TOP 10-2-110 719188 16/04/69

THEODOLITES

Describes a method for evaluating theodolite physical and technical performance characteristics. Describes procedures for test preparation, accuracy, comparison with other theodolites, atmospheric condition effects, and optics efficiency. Discusses data reduction and presentation. Not applicable to photo theodolites and cinetheodolites.

TOP 10-2-124 741865 14/01/72

PRINTING EQUIPMENT

Describes a method for evaluation of printing equipment operational and performance characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for paper capacity, feed, registration, reproduction accuracy, turntable trueness, functional performance, controls, and indicators. Applicable to printing presses, printing machines, dry developing machines, electrostatic printers, and lithographic plate coating machines.

TOP 10-2-130 734846 01/12/71

PHOTOGRAPHIC EQUIPMENT

Describes a method for evaluating photographic equipment operation and performance characteristics of photographic coverage, safety, human factors evaluation, lens resolution, lens equivalent focal length, lens distortion, shutter, synchronization, flash units, illumination, range finder focusing, view finder, light leakage, film scratch, steadiness, film advance speed, photographic printers processing machine, photographic film and paper, chopper-paper cutter, drier, leakage, copying camera, lithographic plate coating machine turntable trueness and functional performance, environmental testing, maintenance evaluation, reliability, transportability, durability, and value analysis.

TOP 10-2-137 719194 06/06/69

PROJECTOR, STILL PICTURE

Describes a method for evaluating still picture projector technical performance and safety characteristics relative to suitability for service use. Describes procedures for test preparation, resolution, distortion, screen illumination, transparency temperature, projected image area size, noise, physical stability, accelerated wear, environmental tests, transportability, safety, maintainability, reliability, human factors, and value analysis. Discusses data reduction and presentation to include a safety statement. Limited to still picture (transparency) projectors, not to overhead or vertical reflecting photogrammetric projectors.

TOP 10-2-138 868365 10/03/70

PROJECTION SET, MOTION PICTURE

Describes a method for evaluating motion picture projection set technical performance and safety characteristics relative to suitability for service use. Describes procedures for test preparation, technical performance, electromagnetic compatibility, durability, transportability, environmental test, maintenance, safety, human factors, value analysis, and quality assurance. Discusses data reduction and reduction and presentation to include a safety statement. Limited to projectors that optically reproduce audio information, not to projectors using magnetic reproduction systems.

TOP 10-2-145 A142261 13/06/84

AIR CONDITIONERS

Describes testing procedures for determining whether air conditioners meet specifications in applicable requirements documents.

TOP 10-2-146 719195 31/07/69

ICEMAKING MACHINES

Describes a method for evaluating icemaking machine technical performance and safety characteristics relative to suitability for service use. Describes procedures for test preparation, functional performance, defrosting, electromagnetic compatibility, environmental test, effects of water quality, maintenance, transportability, safety, human factors, and value analysis. Discusses data reduction and presentation to include a safety confirmation. Limited to overall performance tests on air- or water-cooled, self-contained, automatic, electric powered icemakers.

TOP 10-2-151 719196 15/04/69

CLOTHING REPAIR SHOP, TRAILER-MOUNTED

Describes a method for evaluating trailer-mounted clothing repair shop technical performance and safety characteristics relative to suitability for service use. Describes procedures for test preparation, electrical and performance tests, durability and trailer brake tests, electromagnetic compatibility, transportability, cabinet assembly water leakage tests, environmental storage tests, safety, maintainability, reliability, human factors, and value analysis.

TOP 10-2-152 719197 25/11/68

TEXTILE REPAIR SHOP, TRAILER-MOUNTED

Describes a method for evaluating trailer-mounted textile repair shops. Describes procedures for test preparation, electrical tests, electromagnetic compatibility, sewing machine and durability tests, trailer brake and transportability tests, cabinet assembly water leakage test, environmental storage tests, safety, maintenance, human factors, and value analysis. Cabinet assembly, water leakage tests apply only to items equipped with waterproof storage and transport protective covers.

TOP 10-2-153 719198 16/04/69

SHOE REPAIR SHOP, TRAILER-MOUNTED

Describes a method for evaluating trailer-mounted shoe repair shop technical performance and safety characteristics relative to suitability for service use. Describes procedures for test preparation, electrical and machine performance tests, electromagnetic compatibility, durability and trailer brake tests, transportability, cabinet assembly water leakage tests, environmental storage tests, safety maintainability, reliability, human factors, and value analysis. Limited to trailer-mounted shoe repair shop as currently designed.

TOP 10-2-154 719199 26/05/69

SHOP EQUIPMENT, GENERAL PURPOSE AND ORGANIZATION REPAIR, VEHICULAR-MOUNTED

Describes a method for evaluating vehicular-mounted shop equipment technical performance and safety characteristics relative to suitability for service use. Describes procedures for electrical and performance tests, component compatibility, durability, transportability, cabinet assembly water leakage test, environmental storage tests, safety, electromagnetic compatibility tests, maintainability, reliability, human factors, and value analysis. Limited to testing the repair shop as a system, not for testing components.

TOP 10-2-155 A159150 09/09/85

FLAMMABILITY TESTS OF MILITARY SHELTERS

Describes procedures for tests to determine fire hazard characteristics of metal-faced foam core shelter material. Includes flame spread and fuel-contributed test, and susceptibility-to-radiant-heat damage test.

TOP 10-2-160 729600 14/07/71

SLEEPING GEAR

Describes a method for evaluating sleeping gear functional performance characteristics. Provides procedures for test preparation, physical characteristics, operator training, performance, insulation properties, weight, bulk, compatibility with related equipment, durability, transportability, maintenance, reliability, safety, human factors, and quality assurance. Applies to blankets, sleeping bags, quilted pads, air-inflated pads, air mattresses, and sleeping bag and poncho liners. Not applicable to post, camp, and station-type sleeping gear.

TOP 10-2-165 719200 10/03/69

SURVIVAL KITS

Describes a method for evaluating survival kit technical performance and safety characteristics relative to suitability for service use. Describes procedures for test preparation, metal and chemical component tests, fabrics tests, transportability, environmental chamber tests, human factors, safety, and value analysis. Discusses data reduction and presentation. Limited to hot and cold climate and overwater survival equipment and components.

TOP 10-2-175 A139558 19/03/84

TENTS AND SHELTERS

Describes procedures for determining the technical performance and safety characteristics of tents, shelters, and their associated tools/equipment, as specified in requirements documents. It does not cover special testing such as sound level, ventilation, etc.

TOP 10-2-180 719202 11/04/69

THERMOMETERS

Describes a method for evaluating thermometer technical performance and characteristics. Describes procedures for test preparation, accuracy, stabilization, resolution, and solar radiation effects. Discusses data reduction and presentation. Not applicable to optical type temperature measuring devices, devices using color changes of a chemical substance to indicate temperatures, sonic thermometers, or radiation thermometers.

TOP 10-2-185 873575 30/06/70

VECTOR CONTROL EQUIPMENT

Describes a method for evaluating vector control equipment technical performance and safety characteristics relative to suitability for service use. Describes procedures for test preparation, chemical analysis, hydrostatic and pneumatic tests, preliminary electrical measurements, operation and performance, electromagnetic interference, durability, balance, transportability, maintenance, safety, human factors, value analysis, and quality assurance. Discusses data reduction and presentation to include a safety confirmation. Not applicable to sleds, carts, and trailers.

TOP 10-2-191 719203 04/12/68

BUOYS, MOORINGS

Describes a method for evaluating mooring buoys technical performance and safety characteristics relative to suitability for service use. Describes procedures for test preparation, operator training, receipt inspection, physical characteristics, leakage tests, transportability, durability tests, safety, and value analysis. Discusses data reduction and presentation. Limited to mooring buoys of the anchored flotation device type only.

TOP 10-2-192 871349 23/03/70

DIVING EQUIPMENT (HELMETS, BELTS, DIVERS DRESS, ETC.)

Describes a method for evaluating diving equipment technical performance and safety characteristics relative to suitability for service use. Describes procedures for test preparation, safety, maintenance, hydrostatic tests, sizing and fitting, donning and removing, performance tests, transportability, stress and accelerated aging tests, magnetic effects tests, human factors, value analysis, and quality assurance. Discusses data reduction and presentation to include a safety confirmation. Limited to equipment worn or used by divers permitting life and function in an underwater environment.

TOP 10-2-196 870035 16/03/70

POUCH, COLLECTION AND BURIAL, HUMAN REMAINS

Describes a method for evaluating human remains collection and burial pouch performance characteristics. Provides procedures for test preparation materiel characteristics, leakage, odor retention, strength, closure wear, environmental storage, decontamination resistance, safety, human factors, and value analysis tests.

TOP 10-2-197 719207 15/07/69

PRISONER-OF-WAR IDENTIFICATION KIT

Describes a method for evaluating prisoner-of-war identification kit performance characteristics. Provides procedures for test preparation, material characteristics, performance evaluation, environmental effects, shock, safety, maintainability, reliability, transportability, human factors, and value analysis tests.

TOP 10-2-198 719208 03/12/68

LASER SAFETY GOGGLES

Describes a method for evaluating laser goggles performance characteristics. Provides procedures for test preparation, physical characteristics, critical wavelength attenuation, visible light transmission, infrared transmittance, ultraviolet transmission, haze, definition, prismatic power, refractive power, fracture resistance, breakage pattern, primary beam exposure, safety, and value analysis tests. Appendixes provide information on control of laser radiation health hazards.

TOP 10-2-199 875673 03/08/70

DECEASED PERSONNEL ID SYSTEMS

Describes a method for evaluating deceased personnel identification systems. Discusses pretest requirements for initial inspection, inventory, of basic issue items, physical characteristics, operator training, facilities, and equipment. Provides procedures for technical characteristics, system compatibility, environmental effects, transportability, maintenance, durability, safety, human factors, value analysis, and quality assurance.

TOP 10-2-200 741101 04/03/72

LIFESAVING EQUIPMENT

Describes a method for evaluation of life saving equipment operational and functional performance characteristics of life saving equipment. Identifies supporting test, facilities, and equipment required. Provides procedures for belt buckle and web strength (life preservers) and buoyancy (lifeboats and liferafts).

TOP 10-2-205 720985 26/05/70

CLOTHING, COMBAT VEHICLE CREW MEN

Describes a method for evaluating combat clothing performance characteristics. Provides procedures for initial inspection, physical characteristics user medical examination, operator training, sizing, fitting, donning, doffing, functional suitability, compatibility, combat effectiveness, waterproofness, launderability, environmental effects, safety, maintenance, human factors, chemical, biological, and radiological protective capability, value analysis, and quality assurance. Limited to vehicle crewman combat clothing.

TOP 10-2-206 B087364 23/10/84

BODY ARMOR

Describes test methods and techniques for evaluating the technical performance and characteristics of body armor and determining its suitability to be subjected to further testing for service by the U.S. Army. Evaluation is related to criteria expressed in applicable requirements documents for other appropriate design requirements and specifications. Not concerned with head or foot armor.

TOP 10-2-207 726351 01/06/71

RATIONS

Describes a method for evaluating rations performance characteristics. Provides procedures for test preparation, food preparation, palatability, nutritional evaluation, environmental effects, transportability, durability, reliability, safety, human factors, value analysis, and quality assurance. Appendixes discuss instrumentation, testers, and palatability rating techniques.

TOP 10-2-209 719209 29/11/67

FOOD ACCEPTANCE SURVEYS

Describes a method for evaluating Army food acceptability. Describes procedures for selection survey geographic area, installation, unit, and personnel. Discusses orientation of the survey team and all participants, questionnaire administration, data collection, reduction, and presentation.

TOP 10-2-211 725553 28/05/71

PACKAGING AND CONTAINERS

Describes a method for evaluating packaging and container adequacy. Provides procedures for initial inspection, inventory, physical characteristics, operator training, extent of protection, durability, transportability, maintenance, reliability, safety, human factors, value analysis, and quality assurance. Applies to general equipment packaging and container testing.

TOP 10-2-212 725554 09/05/71

PREPARATION METHODS AND EQUIPMENT - FOOD SERVICE

Describes a method for evaluating food service preparation methods and equipment. Provides procedures for test preparation, food preparation, equipment evaluation, environmental effects, transportability, durability, maintenance evaluation, safety, human factors, value analysis, and quality assurance. Applies to field mess food preparation methods and equipment for standard B rations.

TOP 10-2-213 724097 04/03/71

DIVING EQUIPMENT, SCUBA

Describes a method for evaluating SCUBA performance characteristics. Discusses open-circuit, closed-circuit, and combination (open-and closed-circuit) SCUBA gear. Provides procedures for test preparation, gas cylinder pressure, knife, watch, compass, face mask, electric lantern, pencil and slate, depth gauge, camera, wet and dry suit, life preserver, storage container, spear gun, SCUBA system performance characteristics, environmental effects, electromagnetic interference, durability, transportability, maintenance, reliability, safety, human factors, value analysis, and quality assurance. Applies to open- and closed-circuit SCUBA systems.

TOP 10-2-214 A028308 20/09/74

LARGE CARGO CONTAINERS

Describes a method for evaluating physical and performance characteristics of large cargo containers. Covers initial inspection, assembly and coupling, stacking, lifting, restraint, lashing; wall, roof, and floor strength; racking. Performance tests cover compatibility with other containers, transporting media, and MHE; tests with MHE; engagement, lift, and tie down tests; cargo loading adaptability, intermodal transfer, pendulation, shipping and handling; environmental performance tests including high and low temperatures, snowload, salt fog, dust, condensation, shock, extended storage, corrosion, and weatherproofness; and tests for transportability, LOTS, safety, human factors.

TOP 10-2-215 A055907 31/03/78

CONTAINER HANDLING AND ACCESSORY EQUIPMENT

Describes a method for test and evaluation of handling and accessory equipment for oversized cargo containers. Discusses test planning, preparations for test, inspection, technical performance, beach mobility, logistics-over-the-shore, terminals handling operations, restraint system tests, spreader, sling, and pendant tests. Applicable to transporters, truck/tractors, trailers, container handlers, container stuffers, spreader bars, slings and pendants, internal cargo restraint systems, and special devices such as hoppers and powered taglines.

TOP 10-2-501 719211 27/03/67

OPERATOR TRAINING AND FAMILIARIZATION

Describes a method for evaluating general supplies and equipment operator training requirements. Discusses pretest requirements for personnel data and training. Provides procedures for installation/disassembly, organizational maintenance, direct support maintenance, general support maintenance, and adequacy of training.

TOP 10-2-506 A018236 06/01/75

BALLISTIC TESTING OF PERSONNEL ARMOR MATERIALS

Describes a method for evaluating the resistance of personnel armor material to perforation by attacking projectile fragments, simulated fragments, and small arms ammunition. Covers physical characteristics of materials, firing tests for ballistic limits of materials, determination of residual velocities, and environmental conditioning. Not applicable to material in actual armor configuration.

TOP 10-2-507 730497 15/09/71

MAINTENANCE EVALUATION

Describes a method for evaluating general supplies and equipment maintenance/maintainability characteristics. Discusses pretest requirements for receipt inspection, inventory of basic issue items, physical characteristics, operator training, checklists, questionnaires, and maintenance logs. Provides procedures for maintenance calculations, confidence levels, design for maintainability, equipment publications, tools and equipment, repair parts, storage facilities and components, safety, and human factors.

TOP 10-2-508 A086990 06/05/80

SAFETY AND HEALTH HAZARD EVALUATION - GENERAL EQUIPMENT

Describes development test procedures required to determine whether general equipment is free from design, operational, or maintenance hazards which could prevent accomplishment of intended missions. Provides checklists and a hazard analysis format to assist test personnel in assessing hazards.

TOP 10-2-509 A084621 05/05/80

COLD REGIONS PERFORMANCE TEST OF SNOWSHOES

Describes procedures and data requirements for evaluating snowshoes. Presents procedures for obtaining data to be used in evaluating snowshoe structural strength, compatibility with other military equipment, and functional characteristics for military use.

TOP 10-2-510 130482 08/07/83

COLD REGIONS PROTECTION AND DURABILITY TEST OF CLOTHING

Describes methods for evaluating the durability and protective qualities of clothing developed for cold regions use. It contains procedures for evaluating wind, cold, and snow protection, physical, and thermal durability characteristics. It describes the necessary facilities and instrumentation requirements for test accomplishment.

TOP 10-3-512 A087116 09/05/80

COLD REGIONS ENVIRONMENTAL TEST OF BOOT AND SIMILAR FOOTWEAR

Describes methods for evaluating footwear undergoing cold climate testing. Contains procedures for evaluating functional suitability, compatibility with arctic clothing and equipment operation, durability, troop acceptability, maintainability, and safety. Contains facility and instrumentation requirements for testing.

TOP 10-4-003 877646 24/09/70

GENERAL SUPPLIES AND EQUIPMENT

Describes procedures used in determining the effective storage and operation of supplies and equipment in humid environments. Describes procedures for test preparation, physical and operating characteristics, operational performance, individual equipment suitability, efficiency of tents and shelters, characteristics of clothing, storage effects on armor and related equipment, foodstuff palatability, short-term storage effects on items, long-term (surveillance) storage conditions and related item effects, item security from detection, maintenance, safety, human factors, and value analysis. discusses data reduction and presentation. Limited to testing general supplies and equipment in the humid tropics.

TOP 10-4-004 719258 16/07/69

ARCTIC ENVIRONMENTAL TEST OF RATIONS

Describes procedures used in determining ration acceptability in arctic winter environments. Describes procedures for test preparation, preoperational inspection and physical characteristics of rations, determining consumption acceptability, ration portability, test ration storage, airdrop suitability, human factors, and maintenance. Discusses data reduction and presentation. Limited to testing rations during arctic winters.

TOP 10-4-005 867361 26/11/69

ARCTIC ENVIRONMENTAL TEST OF CLOTHING AND SLEEPING EQUIPMENT

Describes test methods and techniques for evaluating the functioning characteristics of Clothing and Sleeping Equipment under Arctic winter environment conditions. Describes procedures for test preparation, preoperational inspection and physical characteristics, functional and operational suitability of the test items, suitability for airdrop, human factors, safety, and maintenance. Discusses data reduction and presentation. Limited to testing of clothing and sleeping equipment during arctic winters.

TOP 10-4-007 719260 10/07/69

ARCTIC ENVIRONMENTAL TEST OF SKIS AND SNOWSHOES

Describes procedures used in determining the suitability of skis and snowshoes in arctic winter environments. Describes procedures for test preparation, preoperational inspection and physical characteristics, suitability and compatibility of skis and snowshoes during cross-country or ski trail operations, airdrop suitability, human factors, safety, and maintenance. Discusses data reduction and presentation. Limited to testing skis and snowshoes in the arctic.

TOP 10-4-008 719261 16/06/69

ARCTIC ENVIRONMENTAL TEST OF INDIVIDUAL LOAD-CARRYING EQUIPMENT

Describes procedures used in determining the performance and suitability of individual load-carrying equipment during arctic winters. Describes procedures for test preparation, preoperational inspection, physical characteristics, functional and operational suitability of the test item, suitability for airdrop, human factors, and maintenance. Discusses data reduction and presentation. Limited to testing individual load-carrying equipment during arctic winters.

TOP 10-4-009 867357 28/11/69

ARCTIC ENVIRONMENTAL TEST OF BODY ARMOR AND HELMETS

Describes procedures used in determining the performance, safety, human factors, and characteristics of body armor and helmets in the arctic. Describes procedures for test preparation, preoperational inspection, physical characteristics, item functional suitability, airdrop suitability, human factors, safety, and maintenance. Discusses data reduction and presentation. Limited to testing body armor and helmets under arctic environmental conditions.

TOP 10-4-010 719262 17/06/69

ARCTIC ENVIRONMENTAL TEST OF GENERATORS AND GENERATING EQUIPMENT

Describes procedures used in determining the suitability of generators and generating equipment operating in the arctic. Describes procedures for test preparation, preoperational inspection, physical characteristics, cold-starting characteristics, functional and operational suitability, fuel and oil consumption analysis, human factors, and maintenance. Discusses data reduction and presentation. Limited to testing generators in the field and under arctic winter environmental conditions.

TECOM Pam 25-32

TOP 10-4-011 719268 19/08/69

ARCTIC ENVIRONMENTAL TEST OF FUEL FILTER/SEPARATORS AND COLLAPSIBLE PETROLEUM STORAGE RESERVOIRS

Describes procedures used in determining the performance of fuel filters/separators and collapsible storage reservoirs in the arctic. Describes procedures for test preparation, preoperational inspection, physical characteristics, transportability, installation of the test item and components, functional and operational suitability, human factors, and maintenance. Discusses data reduction and presentation. Limited to general testing of petroleum handling equipment.

TOP 10-4-012 872275 23/03/70

ARCTIC ENVIRONMENTAL TEST OF PETROLEUM HANDLING EQUIPMENT

Describes procedures used in determining the performance, safety, and maintenance characteristics of fuel purity monitoring equipment in the arctic. Describes procedures for test preparation, preoperational inspection and physical characteristics, transportability, test item installation, functional and operational suitability, human factors, safety, and maintenance. Discusses data reduction and presentation. Limited to general testing of fuel purity monitoring equipment under arctic environmental condition

APPENDIX A

RELATED PUBLICATIONS

Military Standards

MIL-STD 210C, Climatic Information to Determine Design and Test Requirements for Military Systems and Equipment.

MIL-STD 810E, Environmental Test Methods and Engineering Guidelines.

NATO Standardization Agreements

STANAG 2895, Extreme Climatic Conditions and Derived Conditions for Use in Defining Design/Test Criteria for NATO Forces Materiel.

STANAG 2914, Implementation of Allied Environmental Conditions Publication-1 (AECP-1).

STANAG 4110, Definition of Pressure Terms and Their Inter-relationship for Use in the Design and Proof of Cannons and Ammunition.

STANAG 4113, NATO Crusher Gauge.

STANAG 4114, Measurements of Projectile Velocities.

STANAG 4157, Fuzing Systems Safety and Suitability for Service Use Test Methods, Procedures, and Qualification Criteria.

STANAG 4224, Safety and Suitability for Service - Assessment and Testing of Large Calibre Artillery and Naval Gun Ammunition Greater than 40MM.

STANAG 4225, Safety Evaluation of Mortar Bombs.

STANAG 4234, Electromagnetic Radiation (Radio Frequency) - 200 Khz to 40 Ghz Environmental Affect the Design of Materiel for Use by NATO Forces.

STANAG 4235, Electrostatic Environmental Conditions Affecting the Design of Material for Use by NATO Forces.

Test Reports

TR SY-78-3, DT I Independent Evaluation Report for the Blasting Agent (BA).

TR 8-001-000005, Development Test II (PQT-G) of Demolition Kit, Blasting, XM268.

TR 8-001-000003, Development Test II (PQT-G) of Demolition Kit, Blasting, XM268.

TR 8-011-000XXX, Independent Evaluation Report of DT II for the Demolition Kit, Blasting XM268

TR 8-001-000010, Engineer Design Retest of Demolition Kit, Blasting: XM268.

TR 8-001-000006, Development Test II (PQT-G) of Demolition Kit, Blasting: XM268.

TR 8-011-TEX017, (Unclassified) Firing Record for the Technical Feasibility Test (TFT) for Explosive Formed Penetrator (EFP) Charges.

TR 8-011-TEX005, (Unclassified) Technical Feasibility Test (TFT) of Tactical Explosive System (TEXS).

TR DPG-FR-91-372, First Article/Initial Production Test (FA/IPT) of the Modular Pack Mine System (MOPMS).

TR USACSTA-7176, Final Report Production Qualification Test (PQT) of Pursuit Deterrent Munition, M86 Mine Antipersonnel

TR YPG Report 399, Development Test (PQT-G) of Demolition Kit, Blasting, XM268.

Allied Vehicle Testing Publications

General Subjects

00-01, Philosophy of T. and E.

00-02, Quality Assurance of Tests

00-03, Measurement and Calibration

00-04, Government Vehicle Test Programme

00-05, Government Vehicle Test Report

00-06, Glossary and Definitions

00-07, Categories of Military Vehicles

00-08, Manufact. Information Sheet

00-09, General Evaluation Procedures

00-10, List of Test Facilities p. Country

00-11, Validation of Test Procedures

Vehicle Build

01-10, Dimension and Profile

01-20, Weight Distribution and Ground Pressure

01-30, Centre of Gravity

01-40, Metacentre

01-50, Moment of Inertia

01-60, Assembly and Component Data

01-70, Technical Inspection

Maintainability

02-10, Maintenance

Performance

03-10, Fuel and Oil consumption

03-20, Engine and Transmission Cooling

03-30, Steering and Maneuverability

03-40, Braking

03-50, Speed and Acceleration

03-60, Drawbar Pull/Towing Resistance on Hard Surface

03-70, Power Losses

03-80, Standard Obstacles

03-90, Gradients and Slopes

03-100, Soft Soil Mobility

03-110, Fording

03-120, Amphibious Capability

03-130, Engine Cold Start

03-140, Lateral Guidance Force

03-150, Noise Emission

03-160 W, Dynamic Stability

03-170, Suspension Performance

03-180, Engine Idling

Security From Detection

05-10, Visual

05-20, Hot Surfaces/Infra Red

05-30, Measurement of the RCS

05-40, Radar

05-50, Magnetic Signature

05-60, Acoustic

Transportability

06-10, Transportability Land

06-20, Transportability Sea

06-30, Transportability Air

Special Equipment

07-10, Winches

07-20, Traction Devices

07-30, Stowage

07-40, Cranes

Electrical System

08-10, Electrical Supply System Characteristics

08-20, Electromagnetic Compatability

Ergonomics

09-10, Workspace Measurements

09-20, External Vision of Crew Members

09-30, Noise

09-40, Shock, Vibration and Ride Qualities

09-50, Toxic Risks

09-60, Air Conditioning

09-70, Workspace Illumination

09-80, Task Analysis

09-90, Speech Intelligibility

09-100, Psychophysical Stress

Environment

10-10, Climatic

10-20, Altitude

10-30, Shock and Vibration

Reliability. Availability & Maintainability (RAM-D)

11-10, (RAM-D) Testing of Vehicles

11-20, Coll. and Report. of RAM-D Data

Interoperability

12-10, Interoperability

Components

13-10, General

13-20 T, Track

13-30 W, Tyre

Systems

14-00, Peroa

The proponent of this pamphlet is the Simulation and Technology Division, (Directorate for Technical Mission). Users are invited to send comments to Commander, TECOM, ATTN: AMSTE-TM-T, Aberdeen Proving Ground, Maryland 21005-5055.

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